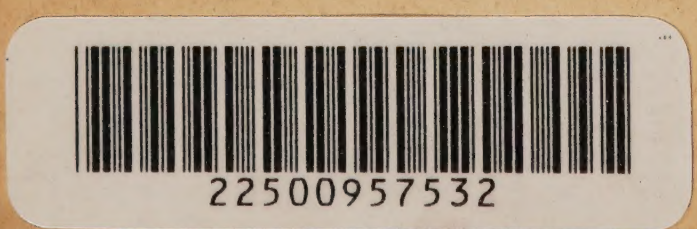
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ORIGINAL ESSAYS.

ART. I.—*The Earth-salts of Bellary.* By EDWARD NICHOLSON, F. C. S., Assistant Surgeon, Analyst of Water, Mysore, Northern and Ceded Districts.

THE soil of the Ceded Districts yields three saline products—salt, nitre and soda. I have lately examined the first two of these in the course of my investigations on the peculiar salinity of wells sunk in black cotton soil.

SALT.

Any person who has been in Bellary must have remarked mounds of black cotton soil here and there about the outskirts of the cantonment. These mounds are raised for the purpose of being worked for earth-salt; when exhausted they are abandoned and become gradually levelled by the scanty rain of years. They are generally situated not far from the lines of drainage of the country at any convenient spot where the soil is saline and water can be easily obtained. Patches of the most saline earth, tested in a simple manner by application to the tongue, are dug up and heaped in a mound ten or twelve feet high; at different levels of the mound funnels are excavated and lined with beaten earth; and the loose earth being placed in these is gradually exhausted by repeated washings. The water having been sufficiently

charged with salts in its passage through the different funnels is run on to a level floor of rammed earth surrounded by a low rim. Under the influence of Bellary sun, evaporation is effected in a few days and a residue of salt is left. This is piled in heaps for any moisture (bittern) to drain off, and when dry, it is sold to the villagers for domestic consumption. The wholesale price is about 30 seers (measures) for a rupee; it is retailed at about eight cash per seer, which is half the price of sea-salt. It is not usually sold in cantonment, as it is never used by the population of sepoys, camp followers and other people not belonging to this part of the country; its use seems to be entirely confined to the villagers.

Bitter flavour is sometimes alleged by the camp population as the reason why this salt is not used, but I am inclined to think that the dislike is more caused by prejudice against the source of the salt.

I have examined several specimens of earth-salt and found them to differ very widely in composition, some being of considerable purity whilst others contained as little as 44 per cent. of sodium chloride. In some cases I found that the fresh salt consisted of perfectly pure and white crystals of sodium chloride bathed in a mother-liquor of deliquescent calcium and magnesium salts, principally nitrates with some chlorides and sulphates. Either washed with cold water and then dried, or pressed between folds of blotting paper, the crystals were much purer and whiter than any sea-salt; but before this cleansing, a distinctly bitter flavour was imparted by the mother-liquor.

One specimen was brought to me by a man who engaged largely in the manufacture, as a fair specimen of the salt produced in his district. This I subjected to complete analysis. When air-dried it still contained 3 per cent of moisture; it was of slight alkaline reaction, clean, but of white effloresced appearance without any regular crystals. Exsiccated, it had the following composition per cent:—

Sodium chloride	44.50
Sodium sulphate	49.30
Magnesium sulphate	4·93
Magnesium nitrate	0·24
Magnesium carbonate	0·35
Calcium carbonate	0·70
Insoluble (sand, clay &c.,)	0·45
	100·47

A person consuming daily the moderate amount of a quarter of an ounce of this salt would take along with the real salt a quantity of sodium and magnesium sulphates (anhydrous) equal to 121 grains of Glauber's salt and 12 grains of Epsom salt. I do not think that difference of taste would warn people against this. Magnesium chloride, nitrate and sulphate are very bitter, so also are calcium chloride and nitrate, and the presence of these in the mother-liquor adherent to crystals of salt would give a decided unpleasant flavour. This is not, however, the case with sodium sulphate; its taste is not very disagreeable, and in, this sample it seemed to be entirely concealed by that of the chloride; a slightly bitter after-taste arose from the magnesium salts present.

The purification of the different samples of earth-salt would have to be done in various ways differing according to their respective composition. Those which consisted of pure salt coated with the deliquescent earthy nitrates and chlorides could easily be purified by simple washing with a little cold water; but this would not do in the case of the sample containing a large quantity of sodium sulphate. If the quantity of sodium sulphate and other foreign salts did not exceed one quarter, the best plan would be to lixiviate the salt gradually with an equal quantity of hot water. But when, as in the case of the above sample, the quantity of sodium sulphate amounts to fully one half, the purification would be best done in the following manner. Wash the salt with a very small quantity of hot water to remove magnesian and other deliquescent salts; then, the salt having cooled, add to it an equal quantity of the coldest water; the sodium chloride will dissolve to the extent of 40 parts in 100 of water, whilst the sodium sulphate will dissolve much more slowly and in a quantity inversely proportionate to the coldness of the water. A hundred parts of water take up 10 parts at 60° F., 15 parts at 68°, and 20 parts at 77°. The colder the water, the less sodium sulphate will be taken up; the residue will consist entirely of this salt, whilst the chloride can be recovered, by boiling, in a much purer condition. The residue might possibly be utilized for the manufacture of carbonate of soda by calcination with kunkur and charcoal.*

* One cannot however but be astonished that the manufacture of this culinary salt should be continued, in spite of its impurity and the small

The brackishness imparted by this salt to many of the wells sunk in the black cotton soil is different in character from that arising in consequence of 'previous sewage contamination.' In Bangalore where, owing to the porousness of the soil, whole districts of the station are saturated with the mineral products of excrementitious infiltration, the salts found are quite distinct; sodium chloride, earthy (calcium and magnesium) chlorides and nitrates appeared in quantities varying from 50 to 300 centigrammes per litre, but I never found the slightest increase in the small amount of sulphates normal in the Bangalore subsoil water. Whatever the character of the water they always remained low—about ·4 to ·6 centigramme per litre. In Bellary, out of the influence of the black cotton soil, the subsoil water does not differ materially from that of Bangalore; and like it contains a very small proportion of sulphuric acid; but the quantity of this constituent increases rapidly as the wells approach the black cotton soil—10 to 30 centigr. are not uncommon and one well yielded as much as 153 centigr. (equal to 227 centigr. per litre, or 159 grs. per gallon of sodium sulphate).

The sulphates are accompanied by a proportionate quantity of chlorides and invariably by some nitrates. The latter are in lesser proportion, as it is not usual in the water of uncontaminated soils for the amount to exceed 2 centigr. per litre. These saline waters are not very hard, the greater part of the salts being alkaline (sodic) rather than earthy; sodium chloride and sulphate are the principal salts present, earthy chlorides, sulphates and nitrates being in considerably smaller proportion. The distinguishing characters between these saline waters and waters charged with the mineral traces of sewage may be thus tabulated:—

Saline water from black cotton soil.	*Saline water from polluted soil.*
Much chlorine 40-100 cgr. per litre.	Much chlorine 20-120 cgr. per litre.
Much sulphuric acid 10-150 cgr. per litre.	Little sulphuric acid under 1 cgr. per litre.
Nitric acid variable 1-5 cgr. per litre. (rarely more)	Nitric acid large if not exposed to air and vegetation 10-30 cgr. per litre.

pecuniary advantage in its use, now that the railway passes through the Ceded Districts. I believe that Government loses a large amount of revenue owing to the substitution of this earth-salt for sea-salt.

'Permanent' earthy salts present; never greater than 'removable' earthy salts. *	Very much permanent earthy salts; generally largely in excess of removable earthy salts.

In many cases the liquor extracted by the salt-makers from the black cotton soil approaches very closely to sea-water in its composition, only differing materially by the presence of nitrates; the product of evaporation is hardly distinguishable from bay salt. The occurrence of sodium sulphate would seem to distinguish the mixture of salts from that found in sea-water, as that substance does not exist in sea-water; but its presence in earth-washings is readily explained when we remember that any sodium silicate or carbonate existing in the soil would decompose the earthy sulphates of marine origin; insoluble earthy silicates or carbonates, and soluble sodium sulphate being the result. And it is to be remarked that the soils which produce salt do not produce soda, the presence of the earthy sulphates that accompany the salt preventing apparently the soda being produced as it otherwise would be.

A peculiarity of the marine deposits (as I believe they are) diffused through the black cotton soil country is their tendency to accumulate in the lines of drainage; not only about dry water-courses at the low level of valleys but also near to the larger drainage system of the country. I am informed that, in some parts of the Ceded Districts, wells near to rivers give as a rule brackish water, quite contrarily to what one would expect. The reason of this is probably to be found in the very partial washing which the soil undergoes from the scanty rainfall. The salts are washed from the soil of the higher tracts of country, but, by the time the subsoil drainage water has percolated to the lower parts of the valleys, it is much nearer to the surface and the cessation of rain with the force of evaporation causes the salts to stop on their journey towards the sea.

In connection with this subject two points may be noted:—

1*st*.—These sulphated waters readily evolve sulphuretted

* I use these terms derived from the old soap-test purely for convenience, meaning by 'removable' earthy salts the carbonates and silicates of calcium and magnesium correctly ascertained. Boiling does not remove them however; a water may be entirely free from 'permanent' earthy salts (chlorides, sulphates, nitrates) yet show after boiling considerable permanent hardness. Evaporation to dryness and re-solution give far more correct results.

hydrogen when in contact with wood. Sojourn in a tub for one night causes most Bellary water to smell offensively by the next morning. This should not be confounded with 'putridity' as it too often is in sanitary documents.

2nd.—The sulphates and chlorides appear to be inimical to vegetable life when repeated irrigation has caused garden soil to become charged with these salts—but in more moderate quantity the sulphates have a beneficial effect on plants requiring much sulphur, leguminous and cruciferous plants for instance. Bellary onions are well known for their excellence and abundance, it is possible that they flourish in consequence of being so freely supplied with the sulphur necessary for the formation of their essential oil.

NITRE.

Nitrates are invariably found in well-waters derived from subsoils of decomposed felspar or of clay. Ammonia, whether that normally found in the atmosphere or that produced by organic decay, becomes oxidized when in contact with porous soil and, in presence of bases with weak acids—such as silicates and carbonates—it changes into nitric acid and expels the weaker acid. As there are few soils that do not contain silicates and carbonates of either potassium, sodium, magnesium or calcium, the presence of nitrates is nearly universal, and we would naturally expect to find them in the washings of the salt-mounds. The filtration of water through soil containing silicates or carbonates would generate nitrates even if none were present originally. I found as much as 1·5 per cent of nitric acid in the solid residue of a sample of earth-washings, a quantity equal to 176 centigrammes per litre of the fluid; and the moisture adhering to the crystals of salt subsequently obtained was highly nitrous. The nitrates present in the earth-washings are always the deliquescent nitrates of calcium and magnesium; the sodium salt being excluded in consequence of earthy sulphates and chlorides having already decomposed any sodium silicate or carbonate that would otherwise have been available for the saturation of nitric acid as it is formed. Potassium being comparatively of rare occurrence in these soils is excluded also from combination as nitrate. The nitrates existing in every sample of earth-washings that I have examined are consequently wasted; while if the mother-liquor of the salt crystals were treated with wood

ashes or other convenient source of potash, the earthy metals would be replaced by potassium, and nitre would be obtained. The quantity would, it is true, be not more than 2 or 3 per cent of the common salt obtained.

The nearest place where I could find nitre to be regularly made was at Sirragirri, about 20 miles north of Bellary. From the account given me of the process by the nitre-maker of Sirragirri it would appear that earthy nitrates are never utilized and that soil containing potassium nitrate already formed is the only kind worked. To obtain nitre at once in this condition in a country where potassium salts are rare in the soil, the nitre-maker must confine his operations to soils in the neighbourhood of villages, selecting those spots where from infiltration of urine, from the drainage of cattle sheds or from the vicinity of ash heaps, the earth has become artificially supplied with potash. Considering that Indians generally use the manufacturing processes which are best adapted to circumstances, and which though rude are quite as profitable to them as the more ingenious but more expensive processes of European industry, I am rather surprised that the addition of potash to earth-washings containing earthy nitrates is not practised in India as it is in Europe. The earth-washings are allowed to evaporate as in the manufacture of salt, and any earthy nitrates are lost in the mother-liquor. The nitre is obtained tolerably clean, in small prismatic crystals mixed with the cubic crystals of common salt; this impurity varies from 6 to 20 per cent or more. If required refined, it is purified by solution and recrystallization, a most wasteful process under the circumstances, as about 30 per cent of the nitre is lost.

The impure nitre is sold at one rupee per maund of 24 lbs.; when purified, the same quantity costs one rupee twelve annas. This very low price is, I think, occasioned by the nitre being too impure for shipment, and the manufacturers are not acquainted with the processes of refining economically. The nitre might be bought and refined at a total cost of not more than 12 shillings per cwt., it being worth 28 to 30 shillings at home. Ignorance of economical refining processes affords the only explanation of the low prices obtained for an article of such value. To refine it economically it would be necessary to accumulate a large quantity, mix it well, and determine from an analysis of a sample the process to be adopted for its purification. The process

applicable to a nitre containing only 5 per cent of impurity would be quite inapplicable to another sample containing 40 per cent of impurity.

SODA.

I have not been able to meet with any instance of this salt being produced near Bellary; that sold in the Ceded Districts is made, I believe, near Cuddapah. The sodium carbonate of which the impure soda principally consists is the result of the decomposition of sodium silicate by atmospheric carbonic acid. Silicic and carbonic acids are about of equal strength and it entirely depends on circumstances which acid can expel the other from its combinations. Silicic acid expels carbonic acid from solutions whilst carbonic acid acting in excess and for long periods of time expels silicic acid from solid silicates. In parts where the soda is produced it is found principally as an efflorescence on the surface, the sodium silicate of the soil having evidently been decomposed by atmospheric carbonic acid. Its presence is incompatible with that of earthy chlorides, sulphates and nitrates; and as these are constantly found accompanying the salt and nitre yielded by black cotton soil, it is evident that the production of salt or nitre excludes that of soda.

Natural sodium carbonate does not appear to be produced in India to any considerable extent, perhaps little in excess of the limited requirements of washermen.*

The main features of the production of these earth-salts may be thus summarized—

Salt is derived from marine deposits in the black cotton soil. It may be mixed with the following impurities :—

1*st.*—Marine earthy salts, principally magnesium chloride and sulphate.

2*nd.*—Sodium sulphate, produced by the decomposition of marine sulphates by sodium silicate.

3*rd.*—Nitrates, principally of magnesium and calcium.

Nitre does not accompany salt as such (as potash nitre),

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* For many years there has been advertized a machine warranted to produce ice by the aid of two salts indigenous to India and procurable everywhere at a cheap rate. The two salts are sal-ammoniac and carbonate of soda; most possessors of these frigefactive engines can give doleful accounts of their searches in the bazar after the last-named salt.

but indirectly as earthy nitrates. Potash nitre can only be obtained from soils to which potassium salts have been added accidentally or purposely. Soils containing the nitrified products of decayed animal matters are alone profitable to work; even in these there is great loss unless potassium salts be added.

Soda is produced in soils by the action of carbonic acid on the sodium silicate of decomposed felspar rocks. Both the carbonate and the silicate of sodium being decomposed by the soluble earthy salts which invariably accompany salt and nitre, soils yielding the latter salts cannot yield soda.

ART. II.—*Report of the Medical Committee appointed to investigate the causes of the Epidemic Fever, which has prevailed in the Provinces of Coimbatore, Dindigul, Madura and Tinnevelly, during the years* 1809, 1810 *and* 1811.

(Communicated by the Inspector General, I. M. D.)

SECTION FIRST.

A geographical description of the Provinces in which the Epidemic Fever has prevailed, with some account of climate in healthy seasons, of their agricultural products, and of the relative condition of their native inhabitants.

The Districts to which the attention of the Medical Committee has been particularly called, as those that have suffered most from the ravages of fever are Coimbatore, Dindigul, Madura and Tinnevelly; comprehending an extent of country in latitude about 3°30′ and in longitude, at some parts nearly 1°35′; a tract of territory, stretching in length from North to South, from the base of the great southern Ghauts of the Mysore country to the farthest extremity of the Peninsula; and in its greatest width from the vast mass of mountains which divide the two Coasts, to Tondy, on the Coromandel shore.

The Coimbatore Province under which are now included in one Collectorate, the Divisions of Caroor, Sattimungalum and Darampooram, may with safety be called an open

country when compared with many of those of our lower Indian Dominions although it is not without its woods* and partial wastes. It is bounded on the north and west by immense mountains, on the East by the countries of Salem and Trichinopoly and on the south by the district of Dindigul. In extent it may be reckoned from North to South about 50 miles: from East to West nearly 45. Contiguous to the southern extremity of Mysore, it in some degree partakes of its altitude, over all those lands which lie to the eastward and southward of it, in the Peninsula; the average plain being about 900 feet above the level of the sea, according to Major Lambton's measurement.

Coimbatore is watered by several rivers, the most considerable are the Cavery and Bhavanie. The first of these, has its source amongst the Coorgh mountains, which form a part of the western barrier of Mysore; and it joins the second at Bhavanie. The Noel and Amberabady with many rivulets are also tributary streams to the Cavery, so that by the time the great conflux of water reaches near to Trichinopoly this river has become one of the finest in India; and as far as regards the purposes of cultivation it has this advantage, that it is filled by both monsoons: by the South-west in the months of June, July and August; and by the North-east in October, November and December.

From its elevation, it may naturally be supposed that the soil of Coimbatore is in general dry; it is on this account peculiarly well suited for pasture land, and the rearing of different dry grains; though there is at the same time no want of extensive tanks. In the vicinity of the *hills*† and in other estates lying near to the Dindigul Province there is much low marshy ground.

About 40 miles due west from Darampooram there is an opening in the great mountains which run south; it is well known by the name of the Paulcaudcherry pass, and is in width at its Eastern extremity about 7 miles, and in length at least 31. This pass is shaped like a funnel, being more than double the width at the end which opens towards the

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* The Annamaly woods celebrated as being the haunts of wild Elephants, lie towards the most southern and western parts of the Coimbatore country.

† Many of the villages of the Chuckragherry talook lie close to the Hills, in the neighbourhood of extensive marshes, and are proverbially unhealthy.

Malabar Coast, than it is at that by which it communicates with the District of Coimbatore. It is nearly on a level with the lands on either side of the Ghauts so that there is a free passage left for whatever winds may blow from Malabar in a direction from N. W. to S. E. and the distance from the Eastern opening of this pass to the sea at the nearest point, is above 70 miles.

The towns are in general well built and some of them are very large and populous; four of the most noted are Darampooram, Coimbatore, Bhavanie and Caroor.

Darampooram stands in a fine high open country; its houses are for the most part well constructed and it has the river Amberabady within about half a mile of it. It is nearly 40 miles distant from the great mountains which run south, but is not more than 15 from the Verapachy or Pulney Hills, in the Dindigul Province.

Coimbatore also stands high* and dry; but is much nearer than Darampooram to the mountains which divide the Peninsula; it is however situated so far north as to be clear of the Paulcaudcherry opening, which gives it a great advantage with regard to climate and comfort over the last mentioned town, as we shall particularly notice at a future period; it is tolerably well built, but its well-water is considered as brackish; and is supposed on that account, to be the frequent cause of cutaneous affections which are common amongst the poorer inhabitants, who cannot afford to get supplied from the Noel, distant about one mile.

Bhavanie stands at the conflux of the Cavery and Bhavanie, and is from this peculiarity of situation much resorted to by the Hindoos, who consider it as a place of more than common sanctity: to the south-east towards Sankerydroog, there is a good deal of jungle and rocky ground: to the southward along the banks of the Cavery lies a fine extensive flat country; and to the north-west, are the rich and picturesque banks of the Bhavanie; the town is not so large as Coimbatore but is well built, and notwithstanding its peninsular situation, dry and comfortable.

Caroor is a large handsome town with wide regular streets, it is situated upon a gentle rising ground, in a fine open dry country and not far from the banks of the Cavery; it is very populous, its Latitude is 10.° 54′. north,

* Coimbatore is in Latitude 11 ° 3,′ Longitude 77 ° 6.′

and it is at the great distance of 74 miles from the Western Ghauts, and 30 from the Pulney mountains.

The Dindigul and Madura Districts, together with Zemindaries of Shevagunga and Ramnad being now comprehended in one Collectorate, we shall speak of them, with respect to certain particulars, conjointly. They occupy a space of territory of nearly one degree in latitude, and in longitude about one and three quarters; that is to say from the northern base of the Pulney mountains to Verdapetty in a southerly direction; and from the great Ghauts to Tondy (in the Ramnad Division) from west to east. Their most western tract is the Dindigul valley which extends from Dindigul in latitude 10° 12′ to Goodalore in latitude 9° 35′.

This valley is formed by the great mass of Pulney mountains towards the north, by those which make the boundary of Travancore towards the west; and on the east by a lower range of hills, which extend from Dindigul south to the bottom of the valley* near Shevagherry, where they unite with the great Western Ghauts. A projection from this range, commonly known by the name of the Aligherry Hills stretches eastward within about 14 miles of the garrison of Madura. These are the nearest high lands to that fortress, and are washed along their northern base by the Vyāar river which is formed by several streams that have their sources in those Hills, bounding the Dindigul valley, and which unite at Goolapooram towards the mouth of the valley. The Vyāar † then taking a south-east direction passes close to Madura, and after traversing the Shevagunga and Ramanad Zemindaries, loses itself in a large tank near Athanghurry, 20 miles south of Tondy; there are other streams which run across the Madura District and flow into the ocean betwixt Valiacondum and Vembar in the Gulf of Manaar.

Dindigul may justly be called a mountainous and woody country; encompassed as it nearly is by high lands, which are all more or less covered with jungle of a prodigious height and which extend all the way to the Western Ghauts.

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* The Dindigul Valley is in length about 75 miles, in breadth 20.

† An extraordinary circumstance regarding this river is, that although on passing Madura it is of considerable size, it is afterwards so completely diverted by artificial means, for the purposes of cultivation, that its bed at Ramanad is generally dry throughout the year and only contains water in unusual floods.

The villages of the Dindigul District, are in general not so well built as those of Coimbatore: the floors of the houses are not sufficiently raised above the level of the ground; and the houses themselves, especially those belonging to villages situated amongst the mountains, are often low, miserable and badly thatched.

The principal Towns of the Dindigul territory, are Dindigul, Vedasundoor,* Pylny Perriacottah† but it will be enough for our present purpose to mention that of Dindigul.

This is situated towards the western extremity of an extensive plain, which from east to west, is about 30 miles long; its greatest width from north to south 25; and it is almost entirely surrounded by very high mountains. The town itself lies extremely low, and stands within about 6 miles of hills, which are directly south from it; the Fort and fortified rock, are close to it towards the west, and the latter has at its base a large weedy tank.

Dindigul is by no means so well built as some of the towns we mentioned in Coimbatore. Before the fatal epidemic, it was computed to contain upwards of 7,000 inhabitants; but now we do not suppose that the population amounts to half that number.

These lands farthest from the Hills in this district are invariably higher and drier than others lying near their base; and many large, marshy and weedy tanks are to be found, particularly in the talook of Toddycomboo.

The general plain of the country is considerably lower than that of Coimbatore, though higher than those of Madura and Tinnevelly; and, adopting the theory that the elevation increases according to the distance from the sea, along the course of the rivers, we shall find, (the height of Coimbatore being already ascertained) that Dindigul is about 400 feet above the level of the ocean.

The Madura Province is more open than that which we have just noticed; as it lies in some measure between the high Dindigul mountains and the sea; and has, east of its meridian, only the insulated hills of Toverincourchie‡ and Cotampetty‡ which approach it within about 16 miles in a N. E. direction. We have observed, both in this District and that of Tinnevelly, that at the distance of 8, 10, or 14 miles

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* In the Toddycomboo talook.

† In the Iyempilly talook.

‡ These are commonly called the *Nuttum* hills.

from the mountains, the country is much higher and drier than it is farther west, where there are often to be met with marshy tracts lying within a short distance of the hills; and rendering the villages in their neighbourhood extremely damp and unhealthy.* There is much jungle in some parts, particularly in those nearest to the boundaries of Tondiman's country, the high lands which surround the Towerinchouchie, and to a certain degree Cottampetty, are covered with thick woods and there is a great deal of low fenny ground between these two villages.

The general character of the Shevagunga Zemindary, is that of a dry country, having a light soil. It is much overrun with jungle; but though flat, there is no cotton ground in it; the paddy lands are confined to the left bank of the Vyāar which is finely cultivated; few tanks are to be met with, and scarcely any hills.

The Zemindary of Ramnad has not a hill in it; it is by no means so dry as the last mentioned and has of late years suffered much from the inundations of the Vyāar which are very unusual in common years. There are some tracts of cotton ground and in the vicinity of Kilcarry there are salt marshes which communicate with the sea.

The towns and villages of the Madura District, though perhaps upon the whole better built than those of Dindigul, are many of them particularly in remote situations near the mountains, miserably constructed and badly thatched.

The four largest towns are Madura, Tirummungalum, Cholavandum and Nuttum.

The following description of Madura is taken from a paper of the 3rd Member of this Committee, which has been laid before Government by the Medical Board :—

"Its site is low, compared with the country adjoining. "It is surrounded with a wet ditch, which with several "tanks within the Fort is filled from the river: in the "immediate vicinity there are many tanks and rice grounds "also supplied with water from the river. The Fort is "$3\frac{3}{4}$ English miles in circumference. It was some "years ago supposed to have contained 40,000 inhabitants "although now from various causes I imagine 20,000 to be "the utmost number of its population. The inhabitants are

* This particularly applies to such situations as lie near the base of that projection of lower hills (before noticed) which advance from the Dindigul mass till within 14 miles of Madura, for instance the Divisions of Madacolum and Aunyoor.

"with a few exceptions extremely poor and their houses the "most low and mean description of huts. The streets are "narrow, filled with dirt and rubbish, and the old drains "having been long since choked up the rain water stands "everywhere in stagnating pools. Thousands of cattle are "kept within the walls; nor is there any regard paid to "cleaning out the various descriptions of filth which is allow-"ed to accumulate."

"The Fort is also much crowded with trees which, besides "the bad effects resulting from their decayed leaves, greatly "retard evaporation, and the water in the tanks within the "Fort being seldom removed is generally putrid and ex-"haling fetid vapours."

The Tinnevelly Province is considerably lower than any of the others in which the epidemic has prevailed. It extends in latitude from Verdapetty in 9° 41′ to Cookapootie near the southern extremity of the peninsula in 8° 7′ and in longitude, at its greatest width from Collatore on the east coast to Pooliery at the opening of the Ariaregowel pass, about 1° 15.′ Its western barrier is the great range of Travancore mountains.* To the east and south it is bounded by the Ocean, and to the north, by the District of Madura. With regard to its elevation, it possesses the same variation as is found to be general throughout the lower districts of India, increasing with the distance from the sea. Palamcottah is ascertained to be about 200 feet above the level of the main.

Tinnevelly may in the strictest sense be called an open country, as few hills are to be found in it and those are insulated or detached. It however contains several waste and jungle tracts, especially towards the east in the neighbourhood of Tuticorine : and in the Calcaud and Punjmahal divisions there are numerous palmyra trees, growing in a sandy soil and interspersed with dry grain cultivation. There are also here and there extensive, low and marshy lands particularly in the vicinity of the mountains, and in the talooks of Bramadshum, Tenkooshie and Calcaud.

The same peculiarity is to be observed in this, as in the Madura Province; that all situations, lying at a certain distance from the hills, are much higher and drier than

* It may here be observed that these immense Ghauts are deeper, that is to say broader in extent from W. to E. opposite to Palamcottah than at any other part of this District ; a piece of information which we owe to Major Lambton.

those which are nearer to them; this we had occasion in several instances to remark on our journey from Madura to Cointalum (via Strevulputtore) as well as to note the consequences of it; but more particularly with regard to the villages of Tewancootsie and Culpettie, in the northern part of the Streevulputtore talook. The latter standing in a fine elevated country was comparatively comfortable and healthy, whilst the other, due west from it and close to the high lands, was found nearly surrounded with wet ground, damp, ruinous and almost depopulated.

The principal rivers which water this province, are the Tambarapoornie and Sytaar; the first of these rises from a singular shaped mountain amongst the Travancore Ghauts, situated in latitude 8°35′ Mr. Arthur of the Engineers informs us that no less than three other considerable streams have their sources from hills and run towards the west.

The Tambarapoornie* about 12 miles N. E. from where it first springs forms by its fall the well known and famous Papanassum cataract; after which, traversing a rich and finely cultivated country, it passes within a mile north of Palamcottah whence pursuing its way in a N. E. direction it is joined, at the distance of 9 miles by the Sytaar; after which junction, changing its course to the south east, it flows towards the ocean into which it falls at Pinnacoil.

Previous to the conflux of the Tambarapoornie and Sytaar, the former is joined by several tributary streams; the latter which is the smallest of the two rises in the hills immediately north of Pooliery at the eastern opening of the Ariangowel pass; soon after which, it is united with sundry rivulets. The most remarkable is that which by its fall creates the famous Courtalum† cataracts and which rises amongst the mountains that form the southern side of a kind of recess, which is here produced by the retiring of the great Ghauts and which is celebrated for the salubrity of its climate.

This recess is in width about 20 miles and at its greatest depth, from its eastern opening to the Ariangowel pass into the Travancore country, about half that distance. The pass itself through the hills is very narrow and may be reckoned in length, in a direct line, about 10

* The Tamborapoornie is about the size of the river Este in Scotland.
† Courtalum is in Latitude 8° 56′.

miles; from its eastern extremity to the western ocean is nearly 40.

Courtallum is not only the name of the Falls* but of a beautiful Shiva pagoda, situated close to them, at the foot of the mountains. This recess, or valley as it is termed, has of late years been sufficiently cultivated, and the hills which bound it on the north, west and south are grand and lofty. The scenery about the pagoda and the falls, is sublime and picturesque, and bears a strong resemblance to some of the most romantic situations in Switzerland, where wood and water, rocks and mountains all combine to aggrandize the landscape.

The greatest height of the lower fall or cataract is nearly 200 feet; there are two others formed by the same stream higher up the mountains but not less beautiful and interesting.

(To be continued.)

Art. III.—*Experiments with Snake (Cobra) Poison.* By John Shortt, M. D., &c., Surgeon, Superintendent General of Vaccination, Madras Presidency.

(Continued from Vol. IV. p. 432.)

No. 136.

October 1868.—A young goat about 18 months old brought by one T. Ramalingum, weighing 25 pounds, height 20 inches, was bitten by a Cobra at 5 minutes to 12; animal bleated much, is lame, raises the wounded leg, restless. At 12 noon, lay down, breathing hurried.

At 5 minutes after 12, noon, convulsions; 7 minutes after 12, noon, dead. Chest immediately laid open, blood from heart rather dark coloured; I find it coagulated in the course of 3 minutes, and it formed the usual clot in a wine glass; upper surface of clot covered by a bright thin scarlet-coloured layer, bottom dark, serum clear, double the quantity of the clot.

No. 137.

October 1868.—A male full-grown partridge weighing 4 ounces, was injected hypodermically under the right wing at 11-26 A. M. with the following solution:—

Saturated solution of common salt one fluid dram, Cobra poison 3 drops. In 20 minutes, the bird became drowsy

* These Falls the Hindoos suppose have the power of washing away their sins.

and eventually died with the usual symptoms of Cobra poison at 12 noon. Death in 34 minutes.

No. 138.

October 1868.—A full grown bitch, rather lean, weighing 15 lbs. was bitten by a large Cobra in the left thigh and had Liquor Potassæ injected into several parts of the body, as well as into the wound, and several doses given internally. But the dog was dead in one hour with the usual symptoms.

No 139.

October 1868.—A young ram weighing 38 lbs. was bitten by two Cobras, one after the other, as the wound inflicted by the first was not visible; some native medicines were administered by a native brought by a Mr. Duarte. The same man had administered the leaves to the cat on the 27th October in a previous experiment. This case is alluded to in Vol. IV., page 84 of the Medical Journal under head "Review of cases of snake bite." The animal was dead in 30 minutes.

No. 140.

October 1868.—A second sheep was bitten on the inner part of the left thigh by one of the cobras that had already been used in the experiment No. 130, at 7-54 A. M. Twelve minutes after being wounded some native medicines were given by the same man, at 8-6. The animal began to grow restless, lay down and got up frequently, looking towards the wounded limb. At 9-30 the sheep seemed apparently well and lively again but at 12, convulsions set in. At 1 P. M. it is lying on the side, unable to stand or sit up, breathing hard. At 2 P. M. it was dead. Pupils were fully dilated, weight of carcase 52lbs. As soon as life became extinct, and the weight of the carcase was noted, the chest was laid open, the lungs were found collapsed; heart greatly distended and full of blood. An opening was made into the left ventricle, and as the blood flowed out it was received into a wine glass. Blood fluid, and of a dark purplish colour; on exposure to air, coagulated in 2 minutes, and in 2 minutes more the coagulum began to consolidate, parting freely with its serum. Clot looked firm, and had a thin paper-like layer of scarlet covering on the exposed surface whilst the other parts were of a black colour. The next day the clot was found reduced to a comparatively small size, and the glass contained much serum, about 3 parts of fluid to one of solid.

No. 141.

February 1869.—A solution of cobra poison was prepared. Dried poison 1 grain, distilled water 2 drams, and on being tested with litmus it yielded a neutral action. To 30 minims of the above solution, 30 minims of Liquor ammoniæ were added, which yielded strong alkaline reaction. The mixture is clear showing no change. To this was added 2 drams of distilled water and injected into a dog at 11-20 A. M. Sickened in 5 minutes, and continued so all the night and died at 6 A. M. on the 17th.

No. 142.

The same day, into another dog was injected 30 minims of the cobra solution of the same strength as the experiment No 141, 30 minims of Liquor Potassæ and 2 drams of water at 11-30 A. M. The dog continued well, but was found dead at 2 P. M. of the 20th February 1869.

No. 143.

To a full grown dog weighing 23lbs, on the same day, a similar solution as that noted in experiment No. 141 but diluted with 6 parts of water was injected hypodermically at 10-53 A. M. The dog died with the usual symptoms of poisoning at 1-55 P. M.

No. 144.

February 1869.—No. 1 solution of cobra poison 10 minims, Liquor Potassæ 10 minims, water 30 minims. No. 2 solution of cobra poison 20 minims, Liquor Potassæ 20 minims, water 60 minims were prepared and placed separately in two test tubes. To No. 2 solution is added 15 minims of diluted nitric acid. The mixture effervesced slightly on adding the acid and attained a milky or opaque colour. That of No. 1 is of a brownish yellow, and yields alkaline reaction. No. 2 acid reaction. 15 minims of solution No. 2 injected into a quail under the left wing hypodermically, and 15 minims of No 1 solution injected in like manner into another quail at 12-54. Quail injected with No. 1 solution died in 5 minutes. That injected with No. 2 seems unaffected and quite well.

No. 145.

February 1869. Solution of cobra poison as prepared yesterday, 15 minims, vinegar 5 minims. The cobra solution was neutral. On the addition of the vinegar, acid reaction. 20 minims of the above solution was injected into a quail at 1-40 P.M. The quail was dead at 3 P. M. Experiments from

No. 121 to No. 125 were performed in the presence of Colonel Macaulay.

No. 146.

I castrated 3 goats and a lamb for a friend. On the 12th day the whole four were seized with Tetanus.

No. 1. On this animal before much rigidity of the muscles had taken place, and while the animal was able to stand, $\frac{1}{4}$ grain of dry cobra poison made into a solution with a dram of distilled water was injected into the neck at 11-20, and the animal died quietly at 12-10. The poison seemed to have no effect whatever on the tetanic symptoms.

No. 2. On the 13th day after castration, animal lying on its right side, limbs stretched out quite rigid. A similar solution of cobra poison was injected into the shoulder at 10-35, at 1-20 the animal was found dead. Died in a couple of hours. No symptoms of the cobra poison were evidenced, nor was there an amelioration of the tetanic symptoms.

No. 3. On the 14th day after operation, animal lying on its right side, legs stretched out in full and as stiff as possible. Head arched forming a curve towards the tail. The whole muscles of the animal as rigid as a piece of board. Injected a similar solution of cobra poison at 11-30, animal dead at 12-55. No effects of the poison were evidenced nor was there any relief of the tetanic symptoms. The lamb was similarly injected with poison, and the symptoms that caused death were the same as previously.

No. 147.

PALAMCOTTA.—*August* 1869. A large powerful dog weighing over 30 lbs. was injected with half a grain of dry cobra poison dissolved in a couple of drams of water at 1-30, P. M. Colonel Dun of the 22nd Regiment Native Infantry administered some native medicine; notwithstanding which the animal became gradually drowsy and died in a convulsive fit at 4-20 P. M.

No. 148.

A pullet weighing 8 ozs. was injected with 2 drops of fresh cobra poison mixed in some blood taken from a dog. The pullet died in 40 minutes.

No. 149.

A Cockerel weighing 10 ozs. was injected with the washings of some cobra poison in a tube at 1-30, P. M. It gradually grew drowsy and died at 4 P. M.

No. 150.

A very large powerful dog was bitten by a fresh Cobra at 2-19 P. M. Two minutes after ½ an ounce of the Acetate of Potash was given it. The Potash was dissolved in water, poured into a piece of fresh inflated sheep's gut, both ends being tied, and was easily forced down its throat. One hour after one ounce of Potash dissolved in 8 ozs. of conjee water was injected into the rectum. This was repeated twice, and subsequently at intervals of an hour each. The dog continued well till the evening when it broke loose, but was brought back the next day at 12 noon, with its head drooping, tongue hanging out and the animal more or less staggering in its gait. It continued thus for about an hour, when stertorous breathing with slight convulsive movements of the extremities set in and at 2 P. M. the animal was dead. These experiments were conducted at Lieut. Francklyne's at Palamcottah in the presence of Col. Dun, Dr. Thompson, Mr. Francklyne and one or two other gentlemen besides a a lot of natives.

No. 151.

September, 1869. RAMNAD.—A large full grown male dog was bitten by a cobra at 7-15 A. M. The Zemindar of Ramnad administered some medicines at 7-18, but the dog died with the usual symptoms in an hour.

No. 152.

Same day and place. A full grown male dog was injected with a solution of ½ a grain of dry cobra poison. 1 minute after the Zemindar administered some medicines internally, scarified the wound and applied the same to it. The medicines were subsequently repeated notwithstanding which the animal died in the course of a couple of hours.

No. 153.

A full-grown cock was injected with the washing out of the syringe at 8-12 A.M.; the bird looked sick at 10 A.M., when it was taken away and the result was not known.

No. 154.

A full grown male dog was pushed before a Cobra let loose on the ground. After some urging, it bit the dog on the left forefoot, 2 points were observed to bleed, at 9-16 A.M. at 9-17 the Zemindar administered medicine. The dog

continued drowsy, staggering, restless, breathing heavily and died eventually in a slight convulsive fit at 9-40 A.M.

No. 155.

As soon as life was extinct in the above animal the jugular veins were opened, and the blood injected into a full grown fowl under the skin of the right wing at 9-50 A.M. The fowl continued quite well and as I was leaving the place the same afternoon, I brought the fowl with me to Trichinopoly and left it at Dr. Duckworth's some three days after. These experiments were conducted at Mr. MacWaters' Head Assistant Collector at Ramnad.

ART. IV.—*Case of a foreign body in the Uterus.* Reported by Mr. R. WARDER, Clinical Clerk of the Lying-in-Hospital.

P———was admitted into the Lying-in-Hospital, under the care of Mr. Cockerill, on the 20th May 1872. Her history is as follows:—She is a widow, 35 years of age, with 4 children, the youngest of whom is 4 years old. Her catamenia had gradually ceased about ten months ago and she had taken native remedies to induce them to return but without success. Three months ago a muco-purulent discharge set in and about this time she noticed a swelling at the lower part of her abdomen which unaccountably changed its position from side to side. She subsequently consulted a native Doctor, who came to the conclusion, that the menstrual discharges had collected in her abdomen and required letting out. He accordingly gave her a medicated *stick*, which he advised should be introduced into the uterus by a midwife. As she was unable to procure a midwife to perform this operation, she, ten days ago, introduced it herself and allowed it to remain ever since. It was not until a week after that its presence caused any serious uneasiness.

Her present symptoms are, slight feverishness and pain at the lower part of the abdomen, extending to the hips and thighs. On digital examination per vaginam, a hard substance could be felt at the upper end of the canal. Sim's speculum was then introduced, and a thin stick was seen protruding from the os uteri, which, extending across the upper part

of the vagina, pressed the posterior wall of it so far directly backwards that the end could not be seen. The whole of the parts were covered with a profuse, offensive purulent discharge.

As an attempt to bring away the stick with a pair of forceps was unsuccessful, Mr. Cockerill partially divided the stick, a short distance from the os, with a curved scissors. The cut part was then siezed hold of with a long vulsellum, and the withdrawal of the stick from the uterus was affected. She immediately after experienced great relief. A plug of cotton dipped in tannic acid and glycerine was then put into the vagina and the patient kept in bed.

The stick was a thin piece of bamboo 4½ inches long and covered for 2 inches with cotton, which, doubtless, was the medium of conveying a local remedy into the cavity of the uterus.

24th May. An examination was made and the parts were all found to be perfectly normal with the exception of a slight hyper-secretion from the uterus and vagina. She was discharged from the Hospital at her own request.

The records of the Lying-in-Hospital contain another case of a foreign body having being introduced into the uterus, but with quite a different object.

Mrs. M. was admitted into Hospital on the 22nd May 1871 under the care of Dr. Harris. She was 5 years married and had 4 children, the youngest eight months old. She presented the following symptoms on admission;—pain at the lower part of the abdomen radiating to the hips and thighs; tenderness of the abdomen; slight tympany; surface generally hot, but hands and feet cold; bowels loose for the past three days and occasionally had vomiting; pulse weak 130; tongue dry and red with patches of white; bleeding from the uterus which began a week ago when large clots were passed. The abdomen was as large as at the 7th month of pregnancy and the breasts were large, with large areolæ, and contained milk.

Examination per vaginam shewed much congestion of the vaginal part of the cervix uteri which was also eroded in parts. A twig of a plant about 6 inches long was found folded in the canal of the cervix and was removed.

Patient was asked to account for the presence of the twig and stated that she was pregnant, and suffering much pain, placed herself under the care of a midwife who introduced the twig a week ago. Bleeding shortly after commenced

and several large clots were passed, but as she did not examine them, she could not say that a fœtus had been discharged.

Her general treatment in Hospital consisted of opium, quinine and iodide of iron internally, and chromic acid to the erosion of the cervix.

She made a gradual recovery which was delayed at times by the occurrence of hæmorrhage from the uterus. Two months elapsed before the uterus returned to its normal size.

Art. V.—*General Hospital Reports.*

A case of Traumatic Tetanus, (under the care of Surgeon Major J. L. Paul, M. D.,) Treatment by Belladonna. Recovery. Reported by Assistant Surgeon E. F. Brockman, Resident Medical Officer, General Hospital.

Moonoosawmy, a cooly, aged 26 years is admitted into the General Hospital on the 20th March with a tonic spasmodic state of the muscles of the trunk, of the extremities and face. Paroxysms of some intensity are said to recur with frequency and to cause a considerable bowing backwards of the body (opisthotonos). Twenty days before he received a ragged wound on the middle finger while at work, and two days ago the tetanic symptoms commenced in the muscles of mastication and of the back. The wound had been treated by native remedies.

On admission the mouth is observed to be opened to a very limited extent and with considerable difficulty; deglutition is interrupted; the muscles of the abdomen are found to be hard and tense. The urine is reported to have been freely voided, and the bowels to be confined. The paroxysms recur on the patient attempting any voluntary movement, during which he complains very greatly of the spasmodic contraction of the diaphragm. On the middle finger on its palmer surface, is an unhealthy lacerated wound of about $1\frac{1}{2}''$ in length and in which no indication of healthy action is present.

Pulv. Jalapæ Co. gr. xx.
Calomel gr. v.
Stat. sumend.

On the action of the bowels, treatment by the Tincture of Belladonna to be commenced.

6 P. M. Bowels acted 4 times after the administration of the powder. At 10-30 A.M., the treatment with Tinc. Belladonnæ was begun by the administration of ten minims in half an ounce of water. At 11-30 A.M. five minims were given, with directions that an increase of three minims of the tincture should be made every hour, until twenty minims were administered at one dose. At 4-30 P. M. this quantity (℥ xx) was administered and continued. The patient in the same state of general tonic rigidity as when admitted.

21*st March* 7 A.M.—The mixture containing twenty minims of the tincture in half an ounce of water was continued until 10 P.M. from which hour it was administered every 2nd hour. Passes urine freely. Rigidity and paroxysms in no manner modified. Pupils partially dilated.

Cont. Tinc. Bellad. ℥ xx.
Unâ quâque horâ.

6 P. M. From 10 A M. the doses of the tincture were increased to ℥ xxv. every hour. No marked improvement.

22*nd March.*—Perspires profusely, vomited a worm this morning. Patient complains less of the muscular pains, and the muscles feel softer. Bowels have not acted since the 20th instant. From 6 P. M., until 10 P. M., last night patient took twenty minims hourly, after which he refused to take any more medicine. Takes his food.

Cont. Tinct. Belladon. ℥ xx. hourly.

23*rd March.*—Took the medicine every hour yesterday. Has taken his food; bowels have not acted; has passed no urine since the night of the 21st (?).

Cont. Træ. Bellad. ℥ xx. hourly.
Ice to be applied to head and spine.

Vespere.—Is a little delirious, the Belladonna is to be suspended.

Hydrate Chlor. gr. xx.
to be given in four doses.

24*th March.*—Was delirious during the night, no medicine has been administered. Passed urine. Bowels confined since the day of admission. Delirium has passed off.

Ice to head and spine.
Træ. Belladon. ℥ xxv.
every 2nd hour.

Vespere.—6 P. M. cont. Tr. Bellad, ℥ xx, every hour.

26*th March.*—Perspires freely. Vomited a worm this morning. Passed a bad night. Took the medicine until 10 P.M., and refused three doses at 11, 12 P.M., and 1 A. M. after which he again took it.

Pulv. Jalapæ co. gr. xx.
Tinc. Bellad. ℥ xx, every hour.
Calomel gr. v.
Stat. sumend.
Ice to head and spine.

Vespere.—Bowels acted four times.

26*th March.*—Slept a little last night. Took his nourishment, and medicine ; the latter every hour. Pulse 120.

Rep. pulv. Jalapæ co. gr. xx. cont, treatment.
Ol. Crotonis ℥ i.

27*th March.*—Has continued taking twenty minims of the tincture since the previous morning except for four hours during which time he was asleep. Rigidity of muscles continues. Temp. 101°·8 ; pulse 90.

Ice to head and spine.
Tinct. Bellad. ℥ xx, every hour.

Vespere.—6 P. M., Hydrate of chloral gr. xx.
at bed time.

28*th March.*—Slept for two hours during the night. Bowels acted. Took nourishment. Complains of intense thirst, and pain in the chest. Took his mixture every hour. Temp. 101°·2. Pulse 72.

Cont, mixt. Bellad. every hour.
Ice to spine and head.

29*th March.*—Patient is better. Complains of great thirst and pectoral pain. Slept for a short time during the night. Bowels acted once. Micturition free. Took his food, and the medicine every hour. Temp. 100°·2. Pulse full and weak.

Ice to spine.
Cont. Belladonna.

30*th March.*—Patient delirious during the night. Medicine omitted since 2 A. M. Bowels acted once. Temp. 101°.

2*nd April.*—Has continued his medicines from 8 A. M., of the 30th morning. Spasms are very slight. Bowels are acting. Slept five hours during the night. Complains of intense thirst. Took his medicine every hour while he was awake. Temp. 101°.

4th April.—Has continued his medicine since the last notes. His appetite is good. Sleeps. Bowels act regularly. Complains of severe pain in his legs. Pulse 120. Temp. 101°. Complains of intense thirst, and was disposed to be delirious last night.

Cont. medicines.

8th. Slept well during the night. Pain in the legs greatly complained of. Pulse 122. Temp. 100. Tendency to delirium; thirst excessive.

Cont. mixt. every 2nd hour.
Lin. Bell. to be rubbed over legs.

9th.—Pulse 108. Temp. 99°·2.

Ice and Liniment. Cont. mixt. every 3rd hour.

11th.—Slept soundly for eight hours during the past twenty four. Pulse 84.

Cont. mixt. every 4th hour.

15th.—Sat up with assistance on the 12th; can flex his thighs and legs.

Cont. mixt. and liniment.

17th.—Walks about the ward without assistance.

Cont. mixt. and liniment.

21st.—Spasms have not occurred since the 11th. Bowels acting: sleeps well; takes his food.

To omit all treatment.

May 8th.—Discharged well.

Remarks.—This case is illustrative of the tolerance of Belladonna when administered with judgment and with observance of the effects of the drug upon the system. The treatment was begun with ℿ v. with an addition of three minims every hour until twenty minims had been reached. The pupils began to shew a tendency to dilatation on the morning of the day after his admission. On the evening of the 23rd, ten days after admission he is stated to have been partially delirious when the Belladonna was ordered to be stopped. On the morning of the 24th March the delirium is said to have passed off, and the Belladonna in 25 minim doses every 2nd hour is recommenced. On the 28th he complained of intense thirst, and during the night of the 29th March he is again reported to have been delirious. The medicine was omitted, but was again administered on the forenoon of the 30th, and for the third time on the night

of the 3rd April the patient's state shewed plainly the poisonous physiological effects of the drug. The severity of the symptoms of the disease was however much moderated, and from this time the frequency of the administration of the drug was diminished. The patient was under active treatment with belladonna from the 20th March to the 17th April, when all treatment was stopped. From the former date to the 3rd April, the amount of Belladonna taken in the form of Tincture is as follows :—

March	20th	of the Tincture			Drachms	3	Minims	25
„	21st	do.	...	...	„	6	„	40
„	22nd	do.	...	...	„	5	„	20
„	23rd	do.	...	...	„	6	„	0
„	24th	do.	...	...	„	3	„	45
„	25th	do.	...	...	„	7	„	40
„	26th	do.	...	...	„	6	„	40
„	27th	do.	...	...	„	7	„	20
„	28th	do.	...	...	„	7	„	20
„	29th	do.	Ounce	1	„	0	„	0
„	30th	do.	„	...	„	6	„	20
„	31st	do.	...		No notes.			
April	1st	do.	...	...		do.		
„	2nd	do.	Ounce	1	„	0	„	0
„	3rd	do.	„	1	„	0	„	0
			Ounces	10	„	4	„	30

This case clearly illustrates how the system can be brought under the influence of the drug, and how accustomed to its use it can be made.

A case of Phosphatic calculus.

Peter Paul, aged 32 years, a butler by occupation, was admitted into the General Hospital under the care of Surgeon R. W. Cockerill for an elephantiasis scroti which was removed by operation on the 9th November 1870. He was discharged on the 9th February 1871 at his own request before the wound was entirely healed. On the 21st day of of the same month he was re-admitted suffering from a daily recurring fever and with an unhealthy condition of the ulcers of the scrotum. Carbolic acid applications to the ulcers were made, and Quinine administered towards removing the febrile attack.

Two days after admission (23rd February) the record of the case states that after some straining efforts to void urine, a small calculus, phosphatic in nature, which had become impacted, was passed. The fever is reported to have ceased, and the patient was ordered diluted nitro-hydrochloric acid in infusion of gentian. On the 28th recurring fever is reported, but no calculous matter is passed, although the urine is scanty and high colored. On examination of the bladder with a sound no calculus can be found. Quinine is again substituted for the mixture.

From this date until the 13th March, fever returned at irregular intervals, and on the 24th March the student in charge of the case remarks "that the patient has been free from fever for a long time; his health also has greatly improved. The ulcer of the testes is clean and presents a healing appearance."

On the 11th April the record says that "patient complains of a burning sensation during micturition;" and again on the 15th, "complains of soreness, and a feeling of obstruction during micturition. No. 6 gum elastic catheter was passed."

He was finally discharged much relieved and "almost well" on the 17th April 1871.

The next time that the patient seeks admission into the hospital was on the 14th November when he presents the following symptoms. "Constant desire to pass urine, pain in the glans penis; occasional and severe pain in the neck of the bladder after micturition; sudden stoppage in the passage of the stream of water. Urine tinged with blood after violent exercise. Pain in left testicle and spot corresponding to the base of the bladder (pain of a sharp pricking nature). Patient is obliged to rise more than half a dozen times a night to urinate. On examination of the urine the excretion is normal in quantity, with a specific gravity 1020; neutral in reaction; rather high colored; loaded with viscid mucus and deposits a considerable phosphatic sediment. A large number of putty-like calculi of small dimensions were discharged yesterday with the urine, and on admission patient produced about 20 pieces of various sizes from $\frac{1}{2}$ to $\frac{1}{3}$ inch in length and a few lines in breadth, to the size of a pea. When the urethra is occluded by one of these, great pain is felt in the loins and inner sides of the thighs, with a general sense of distress. Relief is immediately obtained on the removal of the calculus. The complaint is stated

to be of six months duration, and to have gradually increased in severity.

Acid. nitrici dil. ♏ xv.
Inf. Gentianæ ʒ i
ter in die. sum.—

18*th*.—A silver catheter (No. 12) was introduced, and the bladder washed out with tepid water. A little of the putty like substance escaped through the instrument.

Acid. nitrici. dil. ♏ xxv.
Inf. Gentianæ ʒ
ter. in die. sum.—

20*th November*.—The sediment in the urine not diminished; no more calculi passed.

Tinct. Ferri. Perchlor. ♏ xv.
Acid Nitrici dil. ♏ xxv.
Inf. Calumbæ ʒ i.
ter in die.

"The patient absconded during the day." On the 7th February 1872, the patient seeks admission, and is re-admitted "complaining of pain in the bladder, and inability to pass urine in a continuous stream." The symptoms from which he was suffering on the occasion of his former admission into hospital having been much aggravated during the past ten days he is compelled to look for assistance. The treatment with diluted nitric acid is again employed, and on the 8th February we find the following notes taken by the clinical clerk." The urine passed was examined, the specific gravity is 1012; it is alkaline in re-action; deposits a thick white precipitate when allowed to stand. It contains a large quantity of albumen, phosphates and mucus. At present patient has fever; temperature 102°·8, pulse 120. The fever set in with rigor yesterday evening and has continued since. Passed urine in very small quantities, not over a tablespoonful at a time; is constantly disturbed at night, having to get up to pass urine. Complains of great pain in the bladder and urethra. A catheter (No. 8) was introduced yesterday; it passed without any trouble into the bladder; urine was drawn off. On tilting it a little, a stone could be distinctly felt, and the sound of a stone in the bladder could also be heard.

12*th*.—Had no fever. Complains of pains about the loins, glans penis and neck of the bladder. Passes urine in small quantities at a time, the stream being suddenly cutshort

by something plugging up the passage. Is constantly disturbed at night by having to get up so often to pass urine.
Cont. Acid mixture.

14*th.*—A sound was introduced yesterday, and a stone could be distinctly felt, but its size could not be ascertained on account of the contraction of the bladder. Some tepid water was injected into the bladder but the size of the stone could not be determined with certainty. On removal of the sound, in order to dilate the urethra, catheters up to No. 10 were passed. A small quantity of pus and blood was found oozing out at the meatus urinarius after removing the sound. The examination of the bladder was attended with considerable pain. The urine passed was examined; its sp. gr. was 1007; alkaline in reaction, and contained albumen and phosphates. A sediment is found when the urine is allowed to stand. It consists chiefly of mucus mixed with some phosphates. The obstruction to the stream of urine still exists. Is constantly up at night to pass water.
Cont. Mixt.

17*th.*—A lithotrite was introduced yesterday evening, and a part of the stone was crushed. Passed several small pieces of the stone in his urine last night; feels much better this morning, pain in the bladder is less. Slept better.

20*th February.*—Absconded from hospital.

For the last time on the 14th April 1872 the patient is admitted into the hospital. The notes of the case in the hospital Journal are as follows:—

15*th April* 1870.—Brought into hospital yesterday complaining of retention of urine, and of constant burning and pricking pain in the urethral canal. He says that during micturition a small quantity of urine at first freely escapes, and that afterwards he is able to pass it only in drops on account of some obstacle which he feels near the vesical end of the urethra. The pain is said to be increased during micturition and to radiate towards the abdomen, hips and thighs.

Has been under native treatment. Has passed no stone since leaving the hospital in February last but has become very weak and thin. His urine is of a brown color, and deposits a thick white sediment which occupies about $\frac{1}{4}$ of the quantity passed.

Examined with a catheter and the stone detected.

Acid. Nitrici. dil. ♏ xx.
Inf. Gentianæ ℥ i.

every 4th hour.

Opii. gr. i. bed-time.

18*th*.—Symptoms have not been so urgent. Quantity of phosphatic deposit is less. Appetite has improved. The bladder was washed out with nitric acid lotion by means of the double catheter.

22*nd*.—Since the 20th has had attacks of fever. Patient is getting very weak. Diarrhœa has set in.

Opii. gr. i.

every 4th hour.

Mist. Diaphoret. ℥ i.
Tinct. Aconiti. ♏ i.

23*rd*.—Patient suffers daily from severe fever. Complains much of pain in bladder and urethra.

Ammon. Benzoat. gr. xv.
Liq. Ammon. Acet. ʒ ss.
Aquæ. ʒ i.

every 4th hour.

Liq. Morph. hydrochlor. ℥ i.
at bedtime.

24*th*—Does not complain of pain in the urethra so much as he does of that in the *left half* of his body.

Lin. Opii. to painful part.

At 12 noon. Quiniæ Sulph. gr. v.
Acid. sulph. dil ♏ v.
Aquæ. ʒ i.

27*th*—Continued in much the same state, fever recurring every day; the pain in the left half of the body is very much complained of by the patient; the frequent action of the bowels continued, and irritability of the stomach set in. The patient died at 6-15 A.M.

After death, an examination of the bladder only was permitted by the friends. The organ was removed entire, through a limited abdominal incision. On slitting up the

viscus from the urethra a phosphatic calculus, the dimensions of which are as follows, length $1\frac{3}{4}$ inches, greatest breadth $1\frac{1}{3}$ inch, thickness 1 inch and weighing 400 grains, was found within. The mucous membrane was in a state of chronic inflammation. The bladder with calculus *in situ* is at present in the pathological museum of the Medical College.

It is not often that the case of a patient can be followed up so closely as this has been, and less frequently do opportunities occur in which the symptoms which arise from the formation and retention of a calculus can be noted as in the history above given. Among the most curious, and such as we do not recollect ever having read of, were the very severe pains complained of by the patient in the *left half* of the body, pains so excruciating as to cause him to call out when the upper or lower extremity of that side was touched or moved. Litholysis was tried but the patient's sudden departure from the hospital brought to an end a treatment which was evidently doing good, if we may judge from the diminution in the quantity of deposit passed in the urine. The lithotrite was introduced, and the stone seized and crushed. The patient after this operation for the second time absconded from hospital. Fears of a cutting operation appear to have influenced him in leaving without permission. On the last occasion of his seeking relief, the physical state of the patient was so very low as to prevent any operation for its extraction being employed, although the slightest favorable turn in the symptoms of the patient were anxiously looked for to effect its removal. The formation and passage of phosphatic gravel began only after the removal of an elephantoid scrotum(22lbs. in weight) and were ushered in by repeated attacks of fever of a periodic character. The formation of a phosphatic calculus in a comparatively speaking healthy well-made man of thirty years of age is interesting in itself, and the superventionof this condition after an operation on an elephantoid tumor induces us to ask what connexion, if any, existed between the former and latter of these diseased states ? If any of the readers of the *Madras Medical Journal* have in their experiences met with cases that bear any similarity to this, it would be useful to record them in the pages of this journal.

MEDICAL CONGRESS IN FRANCE.

THE fourth Session of the *Congrès Médical de France* will commence at Lyon on the 18th September, and will last nine days. The subjects to be discussed are the following :—

I. *Epidemics of variola.*

II. *Gun-shot wounds* with special reference to the primary and secondary effects of modern projectiles on living tissues and to the question of explosive bullets. (2). The indications for expectant treatment, for amputations, and for resections, in fractures through epiphyses and through joints. (3). The best modes of dressing such wounds so as to obviate complications and to allow of the transport of the wounded to considerable distances.

III. *Ambulance service in time of war ;* with especial reference to the comparative study of the systems of different nations, the relations of the *chef d' ambulance* to the military commandant, and the connexion between the regular medical department and independent ambulance services.

IV. *Cattle plague or the contagious typhus of black cattle,* information being especially required as to the loss which the last and still raging epizootic has inflicted upon French agriculture in different districts ; as to the points of comparison between this disease and other virulent affections, epidemic or epizootic, human or animal, to which it may be analogous ; as to the different modes of propagation of the plague ; as to the best means of arresting its spread or preventing its recurrence ; and, lastly, as to sanitary legislation in force in different parts of Europe with respect to typhus.

V. *The causes of the relative diminution of the population and its remedies;* the question having two aspects, namely, decrease of birth-rate and infant mortality. The former is due to numerous conditions into which the authors of essays will inquire; such as the conditions which discourage marriage or render it infertile, great standing armies for example, excessive luxury, debauchery, alcoholism, &c., &c. Writers will inquire into the influence of maternal, mercenary and artificial feeding of infants, into *crèches*, vaccination, dwellings &c., and compare in these respects the usages of various countries. Practical suggestions for the remedy of these two evils will be expected from essayists.

VI. *The treatment of syphilis.* Are there cases in which not only cure without mercury is possible but even in which it is better to abstain altogether from the use of that metal? On the other hand, should the exhibition of mercury begin with the appearance of the primary symptoms or be deferred until the general concomitants of syphilis are observed? May radical cure be expected from treatment by mercury alone, or should we anticipate only the disappearance of each of the successive outbreaks of which the complete evolution of the disease consists? In the former case how long should curative treatment last? in the latter, do all syphilitic phenomena, isolated or combined, of necessity indicate resumption of mercurial medication as soon as they appear? Is treatment by cutaneous absorption or by hypodermic injection preferable, either generally or in special cases, to the usual method of absorption by the digestive organs? What are the comparative values of preparations of mercury and of iodine? What kind of aid may the physician expect from mineral waters especially the sulphureous, in the treatment of different forms of syphilis?

VII. *The re-organization of the system of education in Medicine and Pharmacy in France.*

VIII. *The practical means of improving the status of the physician and of placing him in harmony with the part which he has to play in society.* Discussion is specially invited upon. (1). The effectual repression of illegal medical and pharmaceutical practice; (2). The establishment of syndical chambers. (3). The regulation on more equitable terms of the relations between the profession and Mutual Benefit Societies.

VACCINATION REPORT FOR 1870-71.

Once again we have been favoured with a copy of this report, and we have once more tried to read it. The report appears to us to be shorter than those of previous years, but in the matter of figures arranged in tables of complexity it is in no way inferior to any that have preceded it. Those who take pleasure in examining tables which exhibit figures in vast intricacy have here ample opportunity of satisfying the cravings of their morbid appetites. Out of the ninety-two pages which constitute this report, no less than sixty-one are devoted to tables of figures, and of the remaining thirty-one pages, seven are occupied by the letter of the Inspector General of the Medical Department to the Government and by the "order thereon."

The Report embraces a period of fifteen months. This results in a change from the calendar to the official year. The Superintendent General is satisfied with the working of the members of his department, although he was compelled to severely notice "the neglect of duty and inattention to orders" in no less than thirteen of the twenty-three Superintendents.

A new plan for encouraging vaccination among the people has been set on foot by the Superintendent

General of Vaccination. Vaccinators have been placed out in the several taluqs according to the number of taluqs and the size of the district, but from not being immediately under the Superintendent's observation, neglect of duty among the vaccinators has necessarily been of common occurrence, and this plan of working has ended in failure. The total number of operations exceeds that of previous years, there being an increase of 17,835.

We notice with pleasure the interest that has been evinced by the Sub-Collector of Salem, J. F. Price, Esq., in lending his valuable aid in extending the operation in his district, but we are disappointed in finding that a difference of opinion should exist between the Sub-Collector of the district, and the Superintendent General as to the matter of supervision and management of the Vaccinators who are paid by the funds raised in the district by the Sub-Collector. We entirely agree with the Superintendent General in his remarks on this point. He says "the Sub-Collector has decided to retain the management and control in his own hands, to which proposal I had no objection to offer; but I fear that Mr. Price's successors may not take that interest which he has done, and it may be left to the native subordinates, who, from carelessness or want of attention, may allow the work to flag, and even bring it into disrepute by improper work, and thus destroy the confidence of the people in vaccination." We think that Mr. Price has undertaken a duty which will eventually prove too much for him, and that he has overstepped the boundaries of his legitimate duties in this matter. A hope can be expressed however, that he may soon be able to correct his mistaken views on the subject.

Difficulty has been experienced in maintaining a due supply of fresh vaccine lymph for arm-to-arm work, and the Superintendent General thinks

"that it will soon become imperative that some legislative enactment be instituted to compel those who take advantage of vaccination to permit the extraction of vaccine lymph." The suspension of the issue of batta "to mothers to permit their children to follow the Vaccinator for the purpose of furnishing vaccine lymph for arm-to-arm operation" was tried, and the Inspector General of Hospitals in his letter to the Government suggests that the stoppage of batta to the mothers has in all probability been the cause of the difficulty complained of in getting and keeping up a due supply of lymph. If we know anything of the native's character it is, that he will never conform to anything from which he finds that he derives no tangible pecuniary advantage; and this feeling in the natives is kept up and encouraged by the fact that in some of the Districts, as the Superintendents remark from their personal observation "almost all the village officials are unvaccinated," and they believe that in this exists the chief reason for their not co-operating with the Vaccinators in their work. This state of things exists in several of the districts from which reports have been received and the question naturally arises why should these Government officials be exempted from producing certificates of vaccination prior to their being entertained in the service, as is required of other uncovenanted servants? No certificates are demanded from the candidates for the Matriculation Examination of the University, and as these under-graduates are eligible for Government employ, no vaccination certificate is demanded of them. This is a question which we think should engage the attention of those whose duty it is to administer the laws.

That the Superintendents and their bands of vaccinators have under these circumstances to contend with difficulties there can be little doubt; but how infinitely augmented must those difficulties become

when opposition and obstruction are placed by a Collector in the way of these men. We find such an account in the report from Kurnool. To briefly narrate the circumstances ; — The Superintendent reports to the chief office that a gomastah of a taluq cutcherry obstructed the Government Vaccinators in their work and indulged in obscene language towards them for which the Superintendent prosecutes the goomastah before the Sub-Magistrate and has him convicted and fined. While the case was under investigation, the goomastah and his friends in *open court* used insulting language to the Superintendent, who, returning it, was brought before a Magistrate who dismissed the charge. The Superintendent next complains to the Superintendent General of the difficulties and insults he was experiencing from these petty officials of the Government ; the Superintendent General in turn brings the same to the notice of the Collector. In reply the latter complains of the Superintendent as "hasty and hot tempered" &c., and subsequently reports to Government on the conduct of the Superintendent and the backwardness of vaccination in the Kurnool district. We are then informed in the report that "the Superintendent complained of, was in constant communication with the Collector of the district, from whom he obtained a certificate (testimonial) on leaving the district, and it was only after my report to the Collector, complaining of the native officials, that the Collector represented the conduct of the Superintendent to be hasty and hot-tempered, and I consider it my duty to enter thus fully into the matter, and exonerate an intelligent and well behaved young man from the sweeping charge made against him to relieve the native official from blame." The Superintendent General exonerates the Superintendent ; but the latter is obliged, owing to misrepresentation, to undergo the discomfort, and no doubt, expense of a removal

to Ganjam to prevent the arrogant native officials of the Collectorate from being inconvenienced. We ask what ideas of justice and what equality of mind can an officer, a magistrate, possess who is stated to have acted in the manner described in the report under review? If the Superintendent General considered it advisable "for departmental reasons," to remove a Superintendent from one district to another; we ask why did not the Collector also consider it right to act in a similarly judicious manner? If the Collector considered the Superintendent to be a man of the character described by him, we ask, how comes it that a report of complaint was sent in to Government about him and the backwardness of vaccination in the Kurnool district, subsequently only to the representation of the Superintendent General, and with what consistency is it that he grants a certificate to the man of whom he injuriously reports? It is not often that we meet with such circumstances in reports submitted to Government as those which we have reiterated at a greater length than we proposed; and we would suggest from knowledge which we have of similar acts of injustice and inconsistency on the part of those vested with collectoral and magisterial powers that some protection should be afforded, and some method of redress be granted to those who are injured by such misemployment of power as that we have considered, and against whose misrepresentation there should be open some means of redress.

DRUNKENNESS IN FRANCE.

The French *Association contre l'abus des boissons alcoholiques* has published some statistics which seem to show that wine-producing countries are not necessarily sober and that intemperance is rapidly

growing in France. In 1820, 350,000 hectolitres of alcohol were consumed; in 1850, 585,000; and in 1869, 978,000; these figures, of course, not including the products of illicit distillation. The quality of the liquor has not improved as the quantity has increased. Nine-tenths of the spirits manufactured in France in 1850 were brandies of different kinds; in 1869 scarcely three-tenths: the remainder being distilled from beet-sugar, molasses, grain and other farinaceous substances. The price of spirits, too, has fallen 75 per cent in 20 years, and the proportion of drinking shops to inhabitants has steadily risen until it is now 1 to 102.

The consequences which the Association attributes to the increased consumption of alcohol are very serious. The annual total of accidental deaths due to this cause is stated to have increased in 20 years from 331 to 587; of suicides from 240 to 664; and crimes against the person caused by intoxication have increased in the same proportion. Alcoholic insanity has grown with the consumption of spirits, especially of beet and grain spirits. In most of the Departments in which these are distilled the number of cases of insanity attributable to this cause has been quintupled in 20 years and now amounts to from 25 to 40 per cent. There can be no doubt of the need for a society of this nature in France, and we wish it success.

ERBSWURST.

We heard a good deal about this article of food during the Franco-Prussian war and most of the accounts which have since been published are highly favorable to it. It consists mainly of pease flour, to which meat and fat are added, the whole being enclosed in an impervious case, like an ordinary sausage. It is manufactured of two qualities; a finer, wrapped

in tin foil, and with the ingredients more thoroughly incorporated, for officers; and a coarser kind intended for the soldier, in which the particles of meat and of fat are distinguishable in the mass of flour, and the envelope of which is skin. The process of manufacture has been carefully kept secret and is carried on only in Berlin; but some details have leaked out and a paper on the subject has been read before the Agricultural Society of France by M. Laverriere. He says that the peas are first stripped of their outer coat and the meat freed from areolar tissue and fascia and baked, before the two materials are ground and then thoroughly intermingled in a rotatory apparatus. It is believed that the peas are made into a kind of soup and then highly dried before mixture with the meat and fat. Soup is so easily prepared from erbswurst that the materials must be already cooked. In fact eight or ten minutes are enough for the preparation of an excellent and very nutritious dish of soup from this pea-sausage. It is only necessary to heat some water and shake the sausage into it when it boils. The substance breaks up into irregular crumbs and ultimately forms a kind of coarse meal. The water being carefully stirred is heated a few minutes longer and diluted to the strength desired. The flavor of this soup is agreeable and appetizing; no condiments are required as they have been already added. Salt especially is present in abundance.

Each sausage weighs a pound and one was allowed to three men for a meal. They remained unaffected by changes of temperature. All who have had opportunities of judging of this kind of food agree in strongly recommending it. It is impossible not to wish that a food which contains a large amount of nutriment in small bulk could be utilized in this country when an Abyssinian war or a hill campaign strains the resources of the Transport Department.

Unfortunately since the Nightingale Reaction set in and the British Soldier has come to be coddled instead of poisoned and smothered, encouraged to make complaints about his food instead of expected to eat what was provided for him and hold his tongue, it would be difficult to induce him to try an article of diet so foreign to his appetite and habits.

The author whose communication we have been noticing proceeds to contrast the erbswurst with Liebig's Extract; greatly, of course, to the disadvantage of the latter. Liebig himself, we suspect, would be the last to put forward his preparation to compete as an article of food with the other. The Extract is stimulant rather than nutritive. Its nitrogenous constituents, as creatine and creatinine, have little or no value as nutrients. The saline constituents, amounting to nearly one-fifth of its weight are valuable to a certain extent but poisonous in large doses. Kemmerich states that exclusive feeding on Liebig's Extract is more rapidly fatal than absolute starvation. It is obvious that there is no ground for a comparison of the two preparations.

We may add that Prof. Parkes analysed a sample of Erbswurst and found its per-centage composition to be as follows;—water, 16·2; salts, 7·19; nitrogenous matter, 12·297; fat, 33·65; Starch, &c., 30·663. A ration of six ounces contains two ounces of fat.

MEDICAL FUND ANNUITIES.

We understand that applications for the July Annuities have been registered from Surgeons Major J. Peterkin, M.D., H. T. W. Harper, J. Kirkpatrick, M.D., and W. Aitken, M.D. Two only are available, which will be granted to the senior applicants. Surgeon J. McDonald (retired) has applied for a Sick Annuity, but none will be available until January next.

REVIEW.

The Science and Practice of Medicine. By Dr. Aitken. Sixth Edition. Published by Charles Griffin and Co.

The sixth edition of this now well known work has been produced. We do not remember having ever before seen such a rapid reproduction of any work. Fourteen years only have elapsed since the work was published, and remembering well the earlier editions, we notice a very great difference, and that for the better, in this the last edition. The size of the volumes has been augmented especially with respect to the second; the matter has been re-arranged, subjects from the second volume having been transferred to the first; the type is smaller but is in no way less clear than that in the former editions, and we learn from the author's preface that although "the new material added in the present is equivalent in bulk to a third volume added to the last edition, yet the size of the work is not increased, as a special fount of type was cast to enable the printer to preserve clearness without adding to the bulk of the volumes." Then again the woodcut illustrations are more numerous, and have been carefully executed, and well selected, in some instances from other works.

The second volume we think is too cumbrous and if the material were divided between two books more facilities in reading and in reference would be attained.

The 1st volume is divided into three parts, the first of which treats of "topics relative to Pathology and Morbid Anatomy;" the second of "methodical nosology," and the nomenclature and classification of diseases; the third of the nature and special pathology of disease and therapeutics.

The subject of "Inflammation" is one of the first treated of. In this we find the views of the most recent observers repeated as regards the passage of the corpuscular portion of the blood through the walls of the capillaries, and the changes which they undergo beyond these limits; the pathology of the formation of pus and the pathology of hæmorrhagesis hereby modified, for now we find that pus is a living

material, not a dead fluid, and that hæmorrhages to a very great extent may occur in mechanical congestions without a rupture of the walls of the bloodvessels. The woodcuts which illustrate this section of the work are reprints from Paget and Virchow.

To this succeed the subjects of Hypertrophy and Atrophy. Both these are shortly and concisely treated. We find the author draws particular attention to the difference which exists between a *true hypertrophy*, a *false hypertrophy*, and a *hyperplasia*. To quote a small portion,—"cases in which an enlargement takes place in consequence of an *increase in the number of the elements*, are cases of *hyperplasia*." * * * * "Hyperplasia may therefore be considered as a *numerical hypertrophy*, due to a proliferation or reproduction of tissues similar to the original part, and the condition of the pregnant uterus is thus one of *hyperplasia* rather than genuine *hypertrophy*."

The subject of degeneration follows, and of the albuminoid form we have the fullest and most graphic account. "The London College of Physicians no longer regards this lesion as a degeneration, but classes it with other local lesions as a substantive disease." The author appears not to coincide with this view, and therefore places the history of it, as it was in the earlier editions of his work, among the degenerations. We hold the same views on this subject as the author, and regard the infiltration of any tissue with an albuminoid material as resulting from or as secondary to some pre-existing disease; just as for instance, we find convulsions or an inflammation of the pericardium occurring during the course of Bright's disease, as secondary changes.

The section on "Parasitic Disease" succeeds to that of degenerations. In the fourth edition of this work this article is to be found at the end of the second volume. We think its present position is appropriate. We have no hesitation in saying that this is one of the subjects most ably dealt with in the book. The arrangement in this article of Helminthology is good, and the concise description of the various forms of parasites both animal and vegetable is explicit. The *Trichina spiralis* occupies a large share of the author's attention, the symptoms caused by the presence of this parasite in the muscular structures being furnished to the reader in a lucid manner. He says "the symptoms may be arranged into two sets:—(1) extreme lassitude, depres-

sion, sleeplessness, loss of apetite, and continually febrile phenomena which were well expressed, so much so, that the case was set down as one of typhoid fever; but grave doubts prevailed, and (2) a new train of symptoms developed themselves—namely, the whole muscular system became the seat of excruciating pain, especially in the extremities. Contractions of the knee and elbow joints supervened, and associated with such extreme pain as to render extension of the limbs impossible. Œdema of the legs followed; and the case terminated fatally by pneumonia, about the twenty-eighth or thirtieth day after the first symptoms of illness." The above is given as a summary of the symptoms in a typical case of the kind which occurred in the Dryden Hospital.

The subject of Parasitic diseases generally is peculiarly interesting to us as medical men in this country where animal and vegetable forms are so abundant. We turn therefore with increased interest to the description given of the *Filaria medinensis*, and especially during the months which form the second quarter of the year. It is during this time that those who reside in certain localities of Madras, where the worm is endemic, suffer most severely. We learn from this that the worm found in the mud and clay at the bottom is supposed to be very closely related to the Filaria medinensis. The method of its gaining admission into the body is believed to be through the pores of the skin alone. No treatment is given for its removal or expulsion from the structures of the body.

Among the Sterelmintha or solid worms, full descriptions are furnished of the Tæniæ and the forms of Cysticerci. Eight varieties of the former have been found in man, besides two varieties of the *Bothriocephalus*. Of the former eight, two only are of frequent occurrence, and of these two, the *T. mediocanellata* is most frequently met with in this country, is the larger of the two, and is believed to be derived from partaking of the meat of beef or veal. A description of the various forms of cystic parasites follows. The *Echinococcus hominis* is said "to have extended itself to such an alarming degree (in Iceland) that about a sixth of the whole population are affected with it and that it is attracting considerable attention at Copenhagen. The cause is attributed to the immense quantities of dogs kept in Iceland for the herding of sheep and cattle."

The general outline of fevers is well written, and here is

introduced the use of the thermometer in diseases. The value of this instrument was for the first time recorded in an earlier edition of this work, and in this edition we find a more explicit and delineative account furnished of its value as a means of diagnosis and prognosis. Our author groups together the results of a large number of thermometric observations and demonstrates the utility of noting the rise and fall of the mercury taken in conjunction with the pulse rate and respiratory frequency. Who would not be anxious to possess the power of prognosticating death or probable recovery during the first week of a case of enteric fever, and who would not be proud were he in a position to foretell the advent of hospital gangrene on the granulating surface of a stump? Yet here in the thermometer is a means by which a close observer of disease may be able to become possessed of this much-to-be-desired information. This chapter upon Fever and the usefulness of the clinical thermometer is one that we would recommend to those who have not given their attention to these matters. We are sure that they will rise benefitted from the perusal of this part of the work. We notice however an entire omission of the views entertained by Dr. Lionel Beale on Fever, and the treatment of it,—views which we consider to carry with them a great deal of reason. We would therefore draw the attention of our author to this point when revising the material for the next edition.

The third part of the first volume treats of General Diseases. The diseases which are classed under this head are dealt with in succession in accordance with the arrangement in the "Nomenclature of Diseases" published by the College of Physicians, London. Before however entering upon a description of each disease, the author assigns a few chapters to the consideration of the nature of the specific or general diseases commonly called Miasmatic; the laws to which the action of poisons are subject; the nature of malaria and the fever so-called malarious, the causes and modes of propagation of malaria, and the effects of the poison (malarial) upon the body; to the nature of endemic, epidemic and pandemic influences, and the management of epidemics, and the proceedings which are advisable to be taken in places attacked or threatened by epidemic diseases. In the chapter which treats of the enthetic kind of specific or general disease we find an account of the poison of serpents given. This can hardly be said to be a full, and certain-

ly not a fair record of this subject. Dr. Fayrer of Calcutta, and Professor Halford of the Melbourne university are mentioned as the two experimenters who have of late years done most towards elucidating the action of this poison upon the system. We regret to find also that Dr. Shortt as an investigator into this subject is hardly recognised by the author. Dr. Shortt commenced his experiments on the Cobra poison in September 1866, and it was not until the end of the following year that Dr. Fayrer began his studies and experiments. Further we know that during the month of September of the year following that in which Dr. S. began his experiments, he offered a reward of Rupees 500 to any body who would produce an effective antidote to the action of the poison. So that we may conclude that Dr. Shortt had quite satisfied his mind, by the very varied experiments which he conducted for one year that the discovery of an antidote to the poison was no easy matter. For the past two years an account of these experiments has appeared in the pages of this journal, and is still being published. The author therefore through ignorance of the experiments and the conclusions arrived at by Dr. Shortt states that *no* antidote exists for the serpent venom, a statement with which we beg to differ. That potash neutralizes and renders inert this virulent fluid there can be little doubt after witnessing the experiments conducted by Dr. Shortt, and reading those which he has published. The difficulty which still remains to be overcome is in the application of the antidote so as to rapidly overtake, and destroy the action of the poison in the living animal. We leave for further consideration the remaining portions of this valuable work.

(*To be continued.*)

MEDICAL MISCELLANY.

Small-pox in Utero.

Dr. J. T. Hampton, has forwarded the following interesting note to the *Phila. Med. and Surg. Reporter.*

At 10-30 A.M., Sunday, Nov. 12, 1871, I delivered a woman of a child suffering from small-pox. At the time of its birth the disease had reached the vesicular stage, showing that it had passed successfully through the macular and papular stages in utero. On the morning of the fifth day the pustular stage was reached. Up to this time, and until the morning of the tenth day, the child took nourishment and seemed to be doing well. On the morning following it vomited incessantly, blood gushing from its mouth and nose—the same evening it died. The mother was vaccinated successfully six weeks prior to confinement.—*Medical Press and Circular.*

Galvanic Treatment of Bed-sores and Indolent Ulcers.

Dr. Wm. A. Hammond, of New York, recommends for indolent ulcers and bed-sores, the galvanic treatment as first suggested by Crussel, of St. Petersburgh. He says: "During the last six years I have employed it to a great extent in the treatment of bed-sores caused by diseases of the spinal cord, and with scarcely a failure; indeed, I may say, without any failure, except in two cases where deep sinuses had formed, which could not be reached by the apparatus. A thin silver plate—no thicker than a sheet of paper—is cut to the exact size and shape of the bed-sore; a zinc plate of about the same size is connected with the silver plate by fine silver or copper wire six or eight inches in length. The silver plate is then placed in immediate contact with the bed-sore, and the zinc plate on some part of the skin above, a piece of chamois skin soaked in vinegar intervening. This must be kept moist, or there is little or no action of the battery. Within a few hours the effect is perceptible, and in a day or two the cure is complete in a great majority of cases. In a few instances a longer time is required. I have frequently seen bed-sores, three or four inches in diameter and half an inch deep, heal entirely over in forty-eight hours. Mr. Spencer Wells states that he has often witnessed large ulcers covered with granulations within twenty-four hours, and completely filled up and cicatrisations

begun in forty-eight hours. During his recent visit to this country I informed him of my experience, and he reiterated his opinion that it was the best of all methods for treating ulcers of indolent character and bed-sores."—*Medical Press and Circular.*

Quarantine in Cholera. From a paper read before N. Y. Academy of Medicine. By DR. T. WALSEN.

The literature of cholera is so voluminous, and the history of its Indian origin and prevalence, its migration over the Continent of Europe before it reached America in 1832, is so familiar to all that I cannot presume to refer to it except in its relation to the subject before us—the quarantine of cholera.

The verdict of the ablest writer is "that all quarantine and sanitary cordons are useless." I admit at once the truth and equity of the verdict, unless all intercourse with the locality where the disease prevails as an epidemic, even in a limited form, is absolutely and entirely cut off; for the researches of Pettenkofer, corroborated by our own experience, prove beyond a question, that though persons from an infected locality are invariably the pioneers of the disease, wherever it occurs, they may be apparently in good health when they leave the source of infection, and unconsciously to themselves, or inappreciably to others, be the carriers of the disease. But while admitting this as truth in Europe, and on this continent if the disease has once taken a foothold, I make the assertion with as much assurance, that with a sanitary cordon of 2,000 miles in width, and a lapse necessary for its transit of ten days or even more, *an efficient quarantine* may prohibit and absolutely prevent the introduction of the disease into America.

Before 1832 the records of quarantine exhibit, almost annually, deaths, from "cholera morbus;" but not until the tenth of July of the year named have we any records of Asiatic cholera at the quarantine hospital. The disease had then already become epidemic in Quebec and Montreal. Whether it had been conveyed to this port by the *Henry IV.* from Havre, or whether it had been brought hither by the ship *Carrick* from Europe, arriving on the 1st of June, only a few weeks prior to the *Henry IV.*, I will not undertake absolutely to decide. It is rather ominous that the first two cases were admitted from New York, and not from ship-board.

A brig bound from New York to New Orleans was wrecked on Folly Island, and the passengers and crew, among whom cholera had prevailed previous to the disaster, were taken ashore. The disease extended to the few negroes and wreckers living there; physicians and nurses were sent from Charleston to attend the sick.

In January 1833, a man-of-war arrived at Havana with cholera on board. In February it became epidemic in the town, carrying off over 10,000 persons, or 10 per cent of all its inhabitants.

In 1848 cholera prevailed in Bremen. Unable to procure the desired accommodation, a number of emigrants went to Havre, and thence took passage on the *New York* sailing on the 9th of November. On the 16th cholera first appeared among the passengers from Bremen. On her arrival here in New York, on December 6th, seven had died and eleven were landed sick. The remainder were landed at the public stores. Many were subsequently taken sick, and the disease extended to the hospitals and the surrounding buildings—the first case occurring on the 6th of December in the building nearest to the ward where the female cholera patients from the *New York* had been placed; and on the 8th of December another, in the ward contiguous to the cholera hospital for males; on the 10th of December several cases occurred in the building where patients from the same ship with other diseases had been placed. In all, over 100 were attacked.

In the spring of 1849 a number of vessels arrived with cholera on board, the disease again extending to other patients, over 100 dying. But it was not until May that it made its appearance in New York.

In Boston the *Argyle* arrived from Scotland, with cholera on board on the 4th of June. 600 deaths occurred from the 11th of June to the 13th October. In New Orleans the first case of cholera came from the ship *Swinton*, arriving on the 2nd of December from Havre; and from the 11th of December until the 7th February over 1,200 died.

The fatal consequences that have almost invariably followed the new introduction of cholera during the subsequent years, have not been so appalling as the above mentioned. But the books of the Marine Hospital prove that, in almost every instance when cholera was brought here from ship-board, the disease spread among the sick inmates nearest to the wards containing the patients, and more than once decimated the hospital in its fearful progress.

In 1858 the quarantine hospitals on Staten Island were destroyed by a mob, and the port of New York remained exempt from a visitation of cholera until 1866, when the *Atalanta* arrived from Havre, reporting 60 cases and 15 deaths from cholera during the passage, and having 21 sick with cholera on board. These, and 23 other cases which occurred while the vessel and passengers were at quarantine were sent to the Floating Hospital. Thirty days subsequent to her arrival, and 10 days after the occurence of the last case, the vessel received pratique, and no further cases were reported either among the passengers dis-

charged or the employés of the hospital. About the same time cases of cholera occurred on vessels arriving from the same ports; but the disease again disappeared before they reached New York. It is, however, remarkable that the disease, on these vessels at least, could be traced to the same hotel in Havre; all parties corroborating the statement that several persons died of cholera while the passengers who became the first victims on the different vessels boarded there.

If, then, as clearly proved by the facts before us, cholera never appeared here except when brought from abroad; and persons were invariably the carriers of the disease, both to the vessel and from the vessel to the shore, *the quarantine of cholera is a quarantine of persons*, and the virus, reproducing the disease, is the *personal elimination* of the cholera patient, but differing from the virus of small-pox and typhus—both eruptive diseases—in not being the eliminations of the skin but of the alimentary canal.

The "Floating Hospital" used on the emergency of the arrival of the *Atalanta's* passengers was, for the purpose, certainly preferable to the hospital on Staten Island; for not only was their isolation more perfect and the danger of communication to convalescents or sick of other diseases, especially typhoid, avoided, but the dejections of the cholera patients, incontrovertibly the principal receptacle of the morbific agent, and the generative principle of the disease, were cast into the sea, and with them all danger of infection and communication was avoided. The buildings on West Bank, lately erected, may offer greater facilities and comforts, but scarcely as much security. The well passengers of cholera-infected vessels may be divided into two classes: the first, where the disease already exists, but the patient suffers merely from a colliquative diarrhœa, scarcely more than a matter of inconvenience to him, but equally morbific in its agency as the dejections of a cholera patient in a state of collapse; the second class, merely the subject of the incubation of the disease, but in whom no development has as yet taken place, comprising, of course, all the passengers exposed to the morbific agency of the disease. For this class, the buildings on West Bank are most admirably adapted. The time of quarantine may be fixed at 10 days after the occurrence of the last case, being three days longer than the accepted period of incubation. Though this may seem long, we must not forget that a single case may be the cause of an epidemic, as clearly proved by Pettenkofer, in the history of cholera at Altrau, in 1865, when the disease was introduced by a lady direct and only five days from Odessa; in Thoyden Bois, in England, by a gentleman from London, and in our hospitals, by the arrival of a single cholera patient from Aspinwall.

The quarantine of merchandise may be safely reduced to the quarantine of merchandise soiled by the dejections of cholera patients, and to personal effects. Dr. Simpson relates a case of the transmission of the disease by a chest of clothing from a cholera patient, aided perhaps by the use of unwholesome food contained in the same chest. That the disease in the Marine Hospital almost invariably attacked others in the same building or in the adjacent ones, may be explained by the fact that the soiled linen of cholera patients was placed in a building attached to the watercloset, and allowed to remain there for days, these being only a few feet distant from the shanties used for the reception and treatment of the cholera patients.

The disinfection of the clothing and rags, the only merchandise which properly can be soiled by the dejections, can be effected by ventilation, fumigation, and submerging in a solution of the sulphate of zinc, or, better still, of carbolic acid. How long such effects may retain the cholera virus is rather a matter of opinion than of positive demonstration, and if effects infected with the cholera virus may be disinfected by exposure and ventilation, and if cholera effects disinfected in this way may eliminate the morbific virus, through our own medium, the air, the most pertinent question is the distance to which such morbific agent may be carried. In answer I may cite the theory of Mr. Simon, that the cholera germ diminishes in ratio to the square of the distance from the point of emission. Certainly no case has come under my observation, where the germ was carried more than 200 feet, and the hospital on West Bank offers, therefore, the desired security.

The quarantine of vessels, after the discharge of the passengers, and thorough fumigation and washing by a solution of carbolic acid, is scarcely necessary beyond the time required to do this; and the first instance has yet to be adduced where the infection could be traced to vessel or cargo.

In speaking of the quarantine regulations, I have treated the subject as my long experience and familiarity with the practical workings of quarantine demand; and in presuming to make suggestions before the Academy of Medicine, I invite their deliberations to questions which can only be decided by men of science, and thoroughly familiar with the mode of propagation of each disease. The community looks to the profession as its legitimate guardians, and the merchant for relief from exactions and impositions.—*The Medical Record.*

Killed and wounded.

To present the losses in killed and wounded in battle is to indicate a very sad and terrible picture, and although we are per-

haps not even yet in a position to record the full extent of the losses in the last great struggle, the particulars in our possession give some idea of what they were.

Going no further back than the beginning of this present century, we would enumerate a few of the great battles, and note the cost of human life in each. At Marengo, in 1800, there were on one side 28,000 French, on the other, 30,000 Austrians, or 58,000 in all, of them 43,000 were killed or wounded, or in other words 74 per cent.; at Austerlitz, out of 90,000 French, 80,000 Austro Russians, or a total of 170,000, there were killed and wounded 23,000; at Jena, 100,000 French, 100,000 Prussians, total 200,000, the killed and wounded were 34,000; at Wagram, 150,000 French, 130,000 Austrians, total 280,000, killed or wounded 24,000; at Moskova, 125,000 French, 125,000 Russians, total 250,000 men, killed and wounded, 80,000. At the battle of Lutzen, 1813, where 96,000 Russians and Prussians were engaged against 120,000 French, the allies lost 10,000 men, and the French 15,000; at Bautzen, 96,000 Russian and Prussians were opposed to 130,000 French, the allies lost 18,000 including 6,000 dead, the French 25,000, of whom 8,000 were killed. At Dresden, there were 200,000 Austrians, Russians and Prussians, against 100,000 French, the allies lost 15,000 killed and wounded, and 23,000 prisoners. At Leipsic, 300,000 allies fought and 171,000 French; in the first day of the battle, October 16th, 1813, the regiments actually engaged lost one-half of their men; one regiment, the 7th Landwehr regiment of Silesia, was reduced from 1,800 to 160 men, and during the three following days, the allied army lost 45,000, the French 30,000, of whom 15,000 died. At Waterloo, 68,000 French, 67,000 English, 136,000 men; killed or wounded 14,000. Coming down to more recent times, let us note that, during the Crimean war, the actual losses in men amounted to 256,000 Russians, 107,000 French, and 45,000 English; that the Polish insurrection cost 190,000 men, that the African wars of France have since 1830, cost the latter more than 146,000 men and that the Italian war caused the loss of 59,664 lives of Austrians, 30,220 French, 23,611 Italians, 14,000 Neapolitans, and 2,370 soldiers of the Pope. Again, at the battle of Konigratz, the wounded in the Prussian army gave a per centage of 4·90, and in the Austrian, 9·28; at Magenta, 6·7 of French, and 7·05 of the Austrians; and with regard to the civil war in America, the per centage of the Federal army wounded at Shiloh was 12·51; at Chattanooga, 18·22; at Gettysburg, 11·68; at Wilderness, 19·29; while in regard to the Confederate forces, the proportion of casualties was still greater.

Full particulars are still wanting as to the actual casualties in the opposing armies during the Franco-Prussian war. From such records as are available however, we gather the imperfect

statements which follow. Thus, the losses of the French in killed and wounded are said to have been approximately at Forbach, Woerth, and Gravelotte, 26,000; Sedan, 16,000; Army of the Loire, 22,000; Bourbaki, 7,000; Faidherbe, 4,000; different sieges, 2,000; Paris, 17,000; altogether 89,000 killed and wounded. These figures, however, can only be considered approximate.

After the battles of the 29th and 30th November and 2nd December, 1870, at Champigny, the returns given enumerate the losses at 72 officers killed and 342 wounded, and 936 soldiers killed, and 4,680 wounded, or a total of 1,008 killed and 5,022 wounded, the strength engaged being estimated at 70,000 men; as with the previous figures, however, these are believed to be approximate.

The entire losses of the German forces during the late war, give the following figures of officers and soldiers, namely, officers dead. 1,165; wounded, 3,795; missing, 30; total, 4,990; soldiers dead, 18,131; wounded, 87,742; missing, 6,165; total, 112,038. According to returns published at the time the losses of the troops belonging to the North German confederation, exclusive of Saxony and Baden, namely, general officers, 2 dead, 13 wounded; staff officers, 67 dead, 177 wounded; other officers, 724 dead, 2,375 wounded, 36 missing; cadets and subofficers, 1,394 dead, 5,916 wounded, 274 missing; soldiers, 10,622 dead, 51,153 wounded, 6,875 missing; almoner, 1 dead, 1 wounded; infirms 16 wounded, 31 missing; total, 12,814 dead; 59,738 wounded; 7,250 missing; or a grand total of 79,802 officers and soldiers. The Guard and Landwehr corresponding, lost 412 officers, and 9,536 soldiers, besides 335 soldiers missing.

The greater portion of the above losses took place in the early part of the war, and by a statement published at the time the actual losses of the German forces to the middle of October, 1870, included the following, namely, 498 officers, of whom 48 were of the Reserve, 28 Landwehr, and 2 retired, all of whom fell on the field of battle; 232 officers died of wounds, of whom 21 of the Reserve, and 16 of Landwehr; 42 officers died by disease, of whom 2 of the Reserve, and 6 of the Landwehr. This makes a total loss of 772 officers, of whom 71 were of the Reserve, 60 of the Landwehr, and 2 retired.—*The Doctor.*

The Application of Cold in Fever, (*from* Dr. Beales' "American Practice of Medicine.")

"According to Sir John Chardin, the celebrated traveller, the Persian physicians (devoted followers of the Galenical school)

had frequent recourse to bathing in febrile diseases. His own case particularly is a remarkable example of their practice.

"He had with him a French surgeon, who gave him every assistance in his power during the violent remittent fever with which Sir John was attacked; but on arriving at Laar, they concluded to send for the governor's physician. The latter, on his arrival, stated the nature of his disease (the fever of Bender, or bilious remittent), and, contrary to the gloomy prognostics of Sir John and his professional friend, promised a speedy cure. Chardin called out, 'I am dying of heat.' 'I know it,' said the physician, 'but you shall soon be cooled.' Chardin says:—'The apothecary, who paid me the most constant attention, then procured two buckets of water, and having placed me on a chair, on which I was supported by two men, poured the water over my body, little by little, from the haunches downwards, and then taking a large bottle of rosewater, bathed in the same manner my head, face, arms, and breast. I blessed in my heart the Persian practice of medicine, which treated sick people so voluptuously. But our French surgeon, who was always by me, could not contain his indignation.' 'He is killing you, sir,' said he to me, in a compassionate tone. 'What! bathe you with cold water in the heat of a malignant fever; with a pint of emulsion, two pints of decoction, and a pound of confection in your belly; with I do not know how many draughts of snow-water? Depend upon it,' he continued, 'that instead of being very soon without fever, as he has promised you, your death will be the end of the business.' 'I do not know what will happen,' I answered, 'but, at any rate, I do not feel as if I were about to die, as you suppose.' 'Indeed, at that moment, I felt the heat within me diminish and my senses return; upon which my apothecary, having felt my pulse, said, 'Your fever is abating.' 'It went off from that time so quickly, that by one o'clock in the afternoon I was quite free from it, even in the opinion of the French surgeon. He was quite astonished, and I was transported with joy."—*Medical Press and Circular.*

Vaccination during the fever stage of Variola. By J. H. Tyndale, M.D., House Surgeon, German Hospital, N.Y.

Previous to the great discovery of Sir Edward Jenner, towards the close of the eighteenth century, the rate of mortality from small-pox was enormous, and is estimated to have reached fifty per cent. Moreover, the symptoms and course of the disease were of a more aggravated character. No wonder then that efforts had been made from the earliest periods to mitigate the out-breaks

of the epidemic by preventive measures, as well as by the administration of remedies.

When and where inoculation originated is not known. From time immemorial the Chinese have practised a method of "sowing or disseminating" the disease, which consists in introducing the scales of the eruption into the nostrils. At a very remote period, in Hindoostan, a tribe of Brahmins resorted to it as a religious ceremony. A small incision was made, and cotton soaked in the virus applied to the wound. Offerings were devoted to the goddess of spots to invoke her aid; this divinity having first hinted at inoculation—"the thought being much above the reach of human wisdom and foresight." But the merit of introducing the practice into England, from Turkey, is due to Lady Mary Wortley Montague. Writing from Adrianople, in April, 1717, she observed: "Every year thousands undergo this operation; and the French Ambassador says pleasantly that they take the small-pox here by way of diversion, as they take the waters in other countries. There is no example of any one that has died in it; and you may believe I am very well satisfied of the safety of the experiment, since I intend to try it on my dear little son. I am patriot enough to take pains to bring this useful invention into fashion in England." (The Letters and Works of Lady Mary Wortley Montague, third edition, vol. i., p. 309. London, 1861.)

The debt which our ancestors owed to this lady is not diminished by the fact that inoculation had been practised for very many years in South Wales, where it was known as "buying the small-pox;" for this circumstance only became generally recognized as Lady Montague's views engaged attention, and while she enjoyed the privilege of being the best-abused person in England.

It has been calculated by the Registrar-General of England, that the average number of deaths annually occurring from small-pox in London during the years 1660-79, were 357 to every 100,000 inhabitants, whereas in 1859 they were 42 only for the same proportion. Later statistics have reduced this proportion still further.

But even the most palpable evidences of the benefits of vaccination have never sufficed to quell the opposition to it. Statistics have been published, laws passed and enforced, and still the voice of opposition is as far from being stifled as it was nearly one hundred years ago. It is even at present so vehement that intelligent physicians have entered their protest against vaccination as utterly ineffective. The press has also to some extent endeavored to establish the futility of the enforcement of the measure. To defeat this broad assertion nothing is needed but a reference to the statistics of any country, since the introduction of vaccination.

Some of the objections urged seem at first glance to be quite reasonable; but on closer scrutiny it will be found that all are based upon false presumptions, and consequently worthless.

It has been argued: 1st. That the prevention was worse than the disease; the dissemination of the poison throughout the body was paramount to an introduction of the disease itself, the consequences whereof could not be calculated. While it is true that the poison is intended to be and is disseminated throughout the system, it must be remembered that the constitutional disturbance caused by the introduction of the virus is of the mildest character, and never productive of evil results. On the other hand, the benefits derived from it are immunity from the disease for a period of from seven to ten years, and certain immunity at the time of an epidemic, as my experiments, to be spoken of hereafter, will conclusively prove.

A second objection is the possibility of engrafting upon the constitution such diseases as syphilis, scrofula, etc., by means of virus taken from persons afflicted with these diseases. There can be no doubt that by the use of a foul lancet pyæmia has been caused, and abundant evidence exists of the fact of syphilis having been communicated by vaccination. The use of a dirty lancet can, of course, and ought to be avoided. As to the introduction of syphilis and other blood contaminations, Dr. Viennois, in an exhaustive paper upon the subject (*Archives Générales de Médecine*, vol. i., p. 641; vol. ii., pp. 32, 297; Paris, 1860), has come to the conclusion that if the lymph from a vaccine vesicle alone be introduced, the cow-pox alone will be introduced; but if in addition the blood of a person afflicted with syphilis be also inoculated, then syphilis will likewise be communicated. At the present period, lymph from the vesicle is almost universally employed, a fact to which I will refer again hereafter.

The third, and perhaps most plausible objection, is the uncertainty of a fixed period of immunity. The term of immunity is variously estimated at from seven to ten years, after which time the protection is supposed to have lost its power. Prof. Felix von Niemeyer, lately deceased, had instituted inquiry in that direction, and promised a treatise upon the subject at some future day. The work may have appeared lately but has not come under my observation. Niemeyer feels justified in concluding in advance that vaccination is at all times necessary during an epidemic. Now in a city like New York, and all large places, small-pox never entirely disappears, and an epidemic is only spoken of when the cases are multiplied beyond the ordinary number. It is at such times that our health authorities, ever watchful of the welfare of their fellow-citizens, issue orders for the disinfection of affected neighborhoods, and urge the people to permit themselves to be vaccinated. Perhaps compulsion

would be a better course. And then it is that the question arises, not only whether previous vaccinations will procure immunity, but whether the same now performed is to be considered a perfect safeguard during the present epidemic. There is often doubt in the minds of persons, coming in contact with the small-pox, who have subsequently been successfully vaccinated, whether they would not have escaped the disease without being vaccinated. This is in a great measure encouraged by the assertions of those who have been, or imagined themselves to have been, in contact with it, and providentially escaped infection either without previous or present vaccination. The escape is generally credited to an abundance of moral courage. This induced me to ascertain whether, after a positively decided contagion has taken place, and, the period of incubation being passed, the fever sets in, it would then be of any avail to vaccinate. And the results more than fulfilled my expectations. An epidemic of small-pox, which broke out in the city of St. Louis, and continued for three or four months, furnished the necessary material. While I was acting in the capacity of public vaccinator, a young man presented himself for admission into the hospital, suffering from all the preliminary symptoms of variola. He stated that he had been nursing his brother, then lying sick with small-pox, for the past twelve days, relying for protection against the disease upon vaccination performed in his childhood. For the past forty-eight hours he had high fever, with intense frontal headache, well marked pain in the back, swollen tonsils, and, in short, every premonitory symptom of variola. I vaccinated him carefully, and sent him to the hospital to await the result.

On the following day (expectant treatment having been followed) the fever, headache and pain in the back had abated. An elevation at the point of vaccination and a slight redness indicated the success of the inoculation. The patient felt perfectly comfortable. The vesicle gradually dried up and fell off about the eighteenth day. No further symptoms were experienced by the patient. In order to fully satisfy myself of the truth of my patient's statement I called on his brother and found him in a convalescent stage of variola, the pustules having mostly broken and formed scabs.

The success of this case encouraged me to put my hypothesis to a still further test. During the course of the epidemic, eight other cases of the same nature presented themselves, the details of which are not necessary to describe. Suffice it to say that in each and every case the contagion was fully established. The result in each case was precisely the same as in the first case related above. In two cases the fever stage had lasted fully two days, as in the first case. In the others the fever had continued from twelve to thirty-six hours.

In one case only, the result was unfavorable. The fever in this instance had continued for nearly three days, when the inoculation was performed. A few hours later the eruption made its appearance all over the body, and the case proved a discrete one. I can scarcely assume that vaccination exercised any modifying influence, since no vesicle was reported to have made its appearance (the patient being under the care of another physician), yet the possibility of such an event cannot be denied.

As regards the modus operandi of the virus at this stage, I cannot look upon it as different from that of an ordinary vaccination. A good absorbing surface being produced, and the virus introduced in a state favorable to absorption, it is readily carried into the circulation. Capillary circulation being very active during the fever stage, as evidenced by the thermometer, seems to me to favor the absorption of the virus. This may in some measure account for the unusually rapid appearance of the vesicle. It is not my intention to speculate with regard to the action of the virus in the system. Whether it acts as a ferment, or, in some manner unknown, attracts the poison within the system to that particular spot, are mere matters of speculation. It is a well-known fact that counter-irritation, as for instance the application of croton oil to some particular part of the body, as the chest, has the effect of determinining the eruption to that neighbourhood.

If we choose to consider a local point of irritation a favorable spot for the eruption, the question will be solved as far as speculation can solve it. The fact that at that point the skin has been removed and the corium exposed, will render the spot a "locus minoris resistentiæ" for the eruption.

I think that the results of these experiments will justify me in calling the attention of the profession to them. My excuse for presenting so limited a number of cases, lies in my inability to put it to a further test, owing to want of material. Nevertheless, I do not hesitate to affirm that *vaccination, properly performed, previous to the exacerbation of the fever on the third day, will cut short the disease, by quickly relieving the general symptoms of small-pox and causing a well-marked eruption on the spot inoculated.*

It must be borne in mind that the fever accompanying variola is of a remittent type, and, like all remittent fevers, has its highest range of temperature in the evening. The third, and usually the last exacerbation, is also the most severe (marking the highest temperature), and quickly followed or rather accompanied by the eruption. Vaccine virus introduced during this last remission will scarcely have time to be absorbed, though it is possible that when absorbed it may mitigate the character of the eruption. Of this, however, no positive proof exists, and it is merely mentioned as a possibility, if not a probability.

In inviting the attention of my colleagues to this important matter, I cannot refrain from requesting a strict observation of the ordinary cautions in further testing the results of vaccination during the fever stage of variola. That the virus should be pure, unmixed with blood, and not too old, need scarcely be mentioned. For my part I have found the recently dried scab, exclusive of the inflammatory products on the periphery, rubbed up carefully with a drop of water or glycerine to a creamy consistence, to answer the purpose admirably. Various ages and various physicians have had their own peculiar method for introducing the virus, either by punctures of the skin or by scraping away the cuticle. Punctures of the skin, whether performed by the lancet, a pin or some instrument invented for the purpose, are open to two objections. In the first place, the puncture will close immediately upon the withdrawal of the instrument. Even when the virus is introduced with the puncturing instrument, the application is too sudden to insure absorption. In the second place, it often occurs that, notwithstanding proper care is taken, blood will follow the puncture. Extravasated blood is very slowly reabsorbed, and therefore a hindrance to absorption of the virus when the latter becomes mixed with it.

In my opinion, scraping of the cuticle with a dull lancet until the corium is exposed, is, although a more laborious, a far more certain method. The first appearance of moisture on the scraped spot is an indication of having reached the proper absorbing surface. It is well not to be too sparing in the application of the virus, but to spread it upon the absorbing surfaces (for there should be two) as thickly as possible.—*The Medical Record.*

Digitalis an Anaphrodisiac.

M. Gourvat, in the course of a paper published in the *Gaz. Mèd. de Paris*, on the action of digitalis, says: "When digitalis, or digitaline, is administered for some time to a man in full possession of sexual powers, these become gradually weakened, the propensities disappear, formation of the liquor seminis diminishes, and may at last cease altogether. The anaphrodisiac properties of the drug are the secret of its good effect in spermatorrhœa. With women, digitalis or digitaline excites strong, regular and intermittent uterine contractions, and controls metrorrhagia; hence digitalis is employed in producing abortions. (Tardieu.) It is probable that this drug acts as an anaphrodisiac in women, inducing, by long continued use, impotence and sterility, appearing also, in their cases, to interfere with the development of the Graafian vesicles; the propagation of species being thus doubly retarded.

Pagliari's Hemostatic Water.

This preparation is very valuable in cases where the arteries are friable, where we are unable to seize a broken artery without multiplying incisions, when we have to deal with small retractile arteries, and when we have to meet venous and capillary hemorrhages. Rolls of lint soaked with this water placed in contact with the wound arrest the hemorrhage and form an excellent substitute for pressure which is always more difficult and painful of application.

The Roman chemist Pagliari makes no secret of the preparation which bears his name. It is made thus:

Balsam of benzoin ...	... 250 grams.
Sulphate of alumina and potash...	500 „
Water	... 500 „

Boil together for six hours in a glazed earthenware vessel, stirring the resinous mass continually; and replacing the water lost by evaporation with warm water, so as not to interrupt the boiling. Filter and keep in well-stoppered glass bottles. The undissolved portion of the benzoin will have lost its peculiar odour and its inflammability.—*Jour. des Conn. Méd.*

Quantitative Analysis of Urine. By Dr. Jacquème.

Physiology has taught us that urine is a liquid purely excrementitious, separated from the blood by the kidneys. It clears the body of all products the accumulation of which would interfere with and even arrest the functions of the organs. Urine contains, besides water, saline principles and nitrogenous matters arising from the transformation of protein or quaternary elements. It contains, so to speak, the ashes of organic combustions the result of which is life. Of these principles, some return directly, after serving their purpose, to the mineral kingdom from which they were derived; others, still retaining combustible and living elements, generate spontaneously inferior organisms, vibrios and infusoria, which destroy them and change them into mineral principles. In all diseases, the urine includes morbid substances which are either their results or their causes—substances which must vary with the nature of the disease, but which our coarse and incomplete means of analysis do not allow us to distinguish.

The study of urine was neglected for a long time on account of the ridicule which the uromaniacs had drawn upon themselves. These charlatans, assisted by the ideas of Van Helmont and Paracelsus, surrounded themselves with mystery and prognosed the nature and duration of a disease according to the

color and odor of the urine. But at the beginning of this century, owing to modern investigations and the progress of chemical science urology rose to the same level as other methods of chemical research. We are justified in hoping that, spite of the extravagance of certain chemical physicians of our day, this method will not again fall into the same discredit as too hasty attempts at generalization caused the observations of past times to undergo. My firm conviction of the importance of this study to the clinical physician induces me to publish the method of analysis which I have employed for two years in the Paris Hôtel-Dieu in M. Behier's wards. The plan is simple and within the reach of every medical man.

I. The analysis should be applied to the urine of 24 hours.

1. Note the volume, the density and the reaction.

2. After having weighed in a capsule about four grams of the urine evaporate rapidly in a sand-bath, or (better) in the stove. Take care to put the capsule, cooled, on the balance several times, until it ceases to lose weight. Note the result; and, by a simple subtraction, the weight of the residue tells the proportions of water and of solids in the urine.

3. Wash the residue in the dish five or six times with absolute alcohol, decanting very carefully after each washing. This operation gives (*a*) a residue and (*b*) an alcoholic solution.

4. The residue includes mineral matters—chlorides, phosphates, sulphates—and the less highly oxidized organic compounds—uric acid, creatine, extractive matters or albuminoid substances insoluble in alcohol. This residue is dried on the stove and weighed. It is next calcined in the capsule at a low red heat so as to burn off completely the organic constituents, and to reduce the residue to a white mass. The weight of the latter represents the quantity of fixed mineral matter in the urine. A subtraction gives us the weight of organic matter insoluble in alcohol, which we shall call "insoluble extractive matters."

5. The alcoholic solution is evaporated to dryness. The residue is weighed. The sums of this weight and that of the previous residue ought to be approximately equal to the weight of solid matter found at the beginning. The residue from evaporation of the alcoholic liquid contains the urea and extractive matters soluble in alcohol, the more highly oxidized organic compounds. Add one or two drops of pure nitric acid, the extractive matters are destroyed and the urea converted into nitrate. The thick magma which results is collected on a piece of filter-paper, folded several times and washed by pouring on it some drops of nitric acid saturated with urea. Dissolve the nitrate of urea in a small quantity of water, in a capsule; evapo-

rate the solution and weigh the residue which represents the weight of the nitrate of urea. 100 parts of this nitrate contain 48·7 parts of urea. The difference between the weights of the urea and the alcoholic residue represents the weight of *soluble extractive matters.*

By this procedure, with a small quantity of urine we determine (*a*) water, (*b*) soluble extractive matters, (*c*) insoluble extractive matters, (*d*) urea, (*e*) mineral matters. These data are sufficient to explain to the physician most of the symptoms presented by diseases. If the urine contained sugar or albumen, these substances should be determined separately, remembering that both are insoluble in absolute alcohol.

II. To estimate the mineral constituents evaporate about 300 grams of urine in a dish, calcine the residue, being careful to add nitric acid in order to destroy completely all organic matters. Dissolve the result in acidulated water and divide the solution into three equal parts by means of a graduated burette. The first part enables us to estimate the *lime* and *magnesia*; the second, the *phosphorus*; the third, the *sulphur*, the *potassa* and the *soda*. The *chlorine* is estimated separately by a method which we shall describe farther on.

Lime and *magnesia.*—To the first portion of the solution add ammonia drop by drop until a precipitate appears, which redissolve with a drop of hydrochloric acid. Then add solution of oxalate of ammonia in excess, and allow the precipitate to subside, collect the oxalate of lime on a filter and wash with hot water. Calcine in a platinum crucible, taking care to add, at the end of the calcination, one or two drops of sulphuric acid, to convert the carbonate of lime into sulphate which is not decomposable by heat. Multiply the weight of sulphate of lime by 0·4118; the result is the weight of oxide of calcium contained in the urine.

The filtrate is evaporated, after the addition of hydrochloric acid in slight excess; and from it the magnesia is precipitated as ammonio-magnesian phosphate. Muriate of ammonia and ammonia are added to the acid solution. If it becomes turbid the precipitate must be carefully re-dissolved by means of slight excess of muriate of ammonia. The clear liquid is then mixed with a solution of phosphate of soda. Immediately, or after agitation, a crystalline precipitate of the ammonio-magnesian phosphate is formed, which is allowed about 24 hours to deposit. It is then collected on a filter, washed with cold distilled water containing a little ammonia. Calcination of the precipitate (with the filter) converts it into the pyrophosphate of magnesia. $Mg\ O, NH_4 O, PO_5 = NH_4 O + 2\,Mg\ O, PO_5$. The pyrophosphate multiplied by 0·3661 gives the weight of two equi-

valents of oxide of magnesium. This weight divided by 2 gives the weight of magnesia contained in the urine.

Phosphorus.—To the second part of the liquid alcohol and a slight excess of sulphuric acid are added; the lime is precipitated and separated by filtration. The filtrate is distilled to get rid of the alcohol and a mixture of sulphate of magnesia, muriate of ammonia and ammonia added to it. The phosphorus is precipitated as ammonio-magnesian phosphate, 24 hours are allowed for its deposition, it is then collected on a filter and washed with distilled water and ammonia. It is converted by calcination into pyrophosphate, which multiplied by 0·634, gives the weight of phosphoric acid; and this multiplied by 0·437, represents the weight of phosphorus required.

Sulphur. Potassa. Soda.—To the third portion add excess of nitrate of baryta. An immediate precipitate of sulphate of baryta is formed, which is collected on a filter, washed with hot water, calcined and weighed. The weight of sulphate of baryta multiplied by 0·1373 gives the weight of sulphur contained in the urine.

The filtrate and washings are evaporated to dryness on a sand-bath. The residue is heated on an open fire until most of the carbon is burned. The residual mass is exhausted with boiling water; and, without preliminary filtration, a solution of carbonate of ammonia is added until it ceases to produce a precipitate. Then filter, wash well, and after the addition of hydrochloric acid until an acid reaction is obtained, evaporate the filtrate again to dryness. To remove the ammoniacal salts warm the residue gently: let it cool and weigh. The weight represents the sum of the chlorides of sodium and of potassium.

Dissolve in a beaker the total quantity of chlorides of sodium and of potassium, and after the addition of a few drops of a solution of neutral chromate of potassa, the total quantity of chlorine is determined by means of a titrated solution of nitrate of silver, in the manner to be explained presently in speaking of the estimation of chlorine. If we know the total quantity of chlorides of sodium and potassium, and also that of the chlorine, we can from these data, calculate the potash and the soda. Multiply the chlorine of the mixture by 2·1029; subtract from the product the sum of the metallic chlorides, and multiply the remainder by 3·6288. The result is the chloride of sodium contained in the mixture; and this subtracted from the sum of the metallic chlorides gives the amount of chloride of potassium. Chloride of potassium × 0·6309 = potassa, K O. Chloride of sodium × 0·5299 = soda Na 0.

Chlorine.—Is estimated volumetrically. A solution of nitrate of silver is prepared, titrated by a solution of pure chloride of sodium the quantity of chlorine in which is known. Thus

we can calculate how much chlorine corresponds to a cubic centimeter of silver solution. We pour into a beaker a cubic centimeter of the urine under examination, increase its volume with distilled water and add a few drops of a solution of neutral chromate of potash. Pour into the mixture from a graduated pipette the silver solution, until the liquid changes in color from canary-color to brick red. Read on the pipette the number of cubic centimeters, and by a simple calculation we ascertain the quantity of chlorine which the urine contains.

The nitrate of silver decomposes all the chlorides of the urine without attacking the neutral chromate of potash. It is only immediately after the conversion of the whole of the chlorides into chloride of silver that the nitrate attacks the chromate of potash and forms with it a chromate of silver, the red color of which replaces the yellow of the liquid. This phenomenon is due to the difference of affinities which exists between chlorine and silver, and between chromic acid and the same metal.

The author adds some analyses of albuminous and saccharine urines. He reminds us that sugar is estimated by the polarimetric method. It is insoluble in absolute alcohol and its weight must, therefore, be subtracted from the residue insoluble in alcohol in order to find that of insoluble extractive matters.

Albumen is estimated directly by the balance. It is isolated by precipitation by means of nitric acid and heat combined. It is insoluble in absolute alcohol: so that its weight, also, must be subtracted from that of the insoluble residue to get the weight of insoluble extractive matters.—*Jour. des. Conn. Méd.*

MEDICAL INTELLIGENCE.

(General Orders by the Governor in Council.)

Leave and Allowances.

3rd October, 1871.

The 14th September, 1871, No. 3,551.—The Governor General in Council is pleased to notify that a commissioned medical officer of the army holding a civil medical appointment is subject to the leave rules applicable to other military officers in civil employ.

The 15th May, 1872, No. 3,418.—In continuation of the notification of this Department, No. 3,551, dated the 14th September 1871, the Governor General in Council is pleased to rule that a commissioned medical officer of the army holding a civil medical appointment is subject to the rules applicable to other military officers in civil employ in respect to privilege as well as other leave.

Passages.—Warrant Officers.

4th June 1872.

No. 144 of 1872.—The Government of India has declared that the provisions of G. O. G. G. No. 841* of 31st August 1870, exempting Warrant Officers from the rule which withholds passages at the public expense in certain cases, do not apply to Warrant Officers holding honorary Commissioned rank.

Inspector-General of Hospitals—Leave and Allowances.

7th June 1872.

No. 609 of 1872.—The following paragraph of a Military letter from the Right Honorable the Secretary of State for

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* Madras G. O. G. 13th September 1870, No. 266.

India, No. 81, dated the 18th April 1872, is published for general information :—

Para. 1.—I have decided that an Inspector-General or a Deputy Inspector-General of Hospitals of the Indian Service, on leave in Europe, who has not completed his tour of service and has vacated his appointment, shall be granted the British pay of his rank after vacating his appointment and be allowed to count the period of his absence from India, since vacation of appointment, as service for pension, subject always to the rule as to five years' absence from India.

Leave and Allowances.

14th June 1872.

No. 287.—The Governor General in Council is pleased to declare that the undermentioned rules in the Civil Leave Code are applicable to Commissioned Military Officers in civil employ.

Rule 2, under section 4, (*d*) in Chapter II.
Rules 2 and 3, under section 9, (*b*) in Chapter III.
„ 2 and 4, do. 15, in Chapter V.
Rule 3, under section 18, in Chapter VI.
„ 2, 4, and 5, under section 21, in Chapter VII.
„ 4, 9, and 10, do. 24, do. XII.

2. His Excellency in Council is also pleased to direct the re-publication of the following rules applicable to Commissioned Military Officers in Civil employ.

I.—The words "prior to his proceeding on furlough" in Section 5 of the Military furlough regulations of the 10th November 1868, shall in the case of an officer who takes subsidiary or preparatory leave before furlough, be understood to mean prior to his being relieved of his duties.

II.—Days of embarkation and debarkation are parts of furlough, and furlough allowances only are admissible for such days.

III.—Subsidiary leave ceases the day before embarkation, and commences the day after debarkation. It cannot be extended on the ground that the vessel in which an officer leaves India, or returns to it, touches at some other port in India after the first embarkation or before the final debarkation.

IV.—If an officer remains in India after the end of subsidiary leave prefixed to furlough, his furlough is held to have begun in India, and his absence on furlough is reckoned from the date on which he gave up office.

V.—An Officer may draw allowances as if he were on Privilege leave for any part of his subsidiary leave before furlough, for which, if he were not going on furlough, privilege leave would be admissible to him.

VI.—When an officer applies for leave he should distinctly state under what rule he wants leave, and show that he is entitled to leave under that rule.

VII.—Officers going on leave from the Public Works Department are required to produce no demand certificates from account officers of that department.

VIII.—The Government to which an officer is subordinate may exempt him from loss of appointment when he overstays privilege leave by more than a week.

IX.—Leave may be retrospectively commuted, by the authority which granted it, to any other kind of leave which the said authority would have been competent to allow when the original leave was sanctioned.

X.—When privilege leave is, on medical certificate, retrospectively commuted to furlough out of India, so much of the leave passed before embarkation may be treated as subsidiary leave, as the officer would have been entitled to count as subsidiary leave if he had originally obtained furlough and not privilege leave.

XI.—An officer on privilege leave cannot draw his allowances in England, but his agent may draw them in India in the manner prescribed in Rule 2 under Section 23 (*a*) of the Civil Leave Code.

XII.—If an officer receive an advance of pay in England to enable him to return to duty in India, the advance must be recovered at the rate of exchange fixed for transactions with the Imperial Government at the time it was made.

3. This notification supersedes the notes in italics below the undermentioned rules in the Covenanted Civil Service Leave Code of 1871.

Rules 5 and 6 under Section I in Chapter I.

„ 2, 5, and 6 under Section VII in Chapter II.

Rule 1 under Section X in Chapter II.
Rules 1 to 4 under Section XI in Chapter III.
„ 1 and 3 under Section XII in Chapter IV.
„ 5, 7, and 8 under Section XIX in Chapter VI.
The Subsidiary rule under Section XXI, in Chapter VI.
Rules 1 and 3 under Section XXVI in Chapter IX.
„ „ „ „ XXVIII „ X.
„ „ in Chapter XII.

(General Orders by the Commander-in-Chief.)

Army Regulations.

31*st May* 1872.

No. 46.—The following alterations and corrections are ordered in the Army Regulations—Books to be corrected accordingly :—

Para. 825.—The following is to be added to Clause *(e.)*—and all applications for leave for Veterinary Surgeons other than on medical certificate should show that the request has the sanction of the Inspecting Veterinary Surgeons.

Rule XV. on page 163 is cancelled and the following substituted :—

XV.—If the aggregate of two years' furlough be exceeded whether on medical certificate or private affairs the Officer will vacate his appointment, such extension being in the case of private affairs without pay and in that of Medical certificate with English furlough pay, for a third year only.

Paras 1319 and 1320 are cancelled and the following substituted :—

1319. All therefore that need be laid down as an invariable rule is that the particular body of men among whom cholera has appeared in an epidemic form must be removed from the Cantonments. If for example, this body consist only of the inmates of some one building, the measure need only be applied to them ; if some particular Company or Troop be attacked it will be similarly dealt with—A whole Regiment or the whole of the Troops at the Station need only be sent into Camp, when it is found that the measures already adopted have not stopped the

progress of the disease, or there is reason to fear that they will be insufficient.

1320. With the sanction of Government, His Excellency the Commander-in-Chief begs General Officers and the Chief Administrative Medical Officers to adopt in practice the principle contained in the foregoing paragraph, and on no account during the hot and rainy seasons to vacate whole suits of Barracks, because one or two or even more have been infected with Cholera. It is necessary only to evacuate such buildings as have actually presented cases. During the hot and rainy seasons if other buildings are available, they should be used in preference to placing the men in Camp. In short, at such seasons of the year the Camp must be held to be the last resource. This is more especially necessary when the ground is either covered with water or when it is drying after the rainy season at the Station.

Dress—Officers.

No. 107.

3rd June 1872.

G. O. No. 49* of 1872 is cancelled, and the following substituted:—

With reference to G. O. Her Majesty's British Forces, dated the 25th October 1860, the Commander-in-Chief is pleased to direct the substitution of a plain white tunic for the braided one therein prescribed.

† Page 243 S. O.

2. The tunic should be of sufficient length to just clear the saddle when the Officer is mounted, and will be fastened by four small gilt buttons of Regimental pattern, cuffs pointed, and a pocket outside the left breast, the collar rounded off in front, twisted gold cord on each shoulder.

3. The Sash will be worn on all occasions with the above tunic whether on or off duty, except when used as the Regimental Mess Dress during the hot weather.

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* Madras G. O. C. C. 6th April 1872, page 104.

† Queen's G. O. Head Quarters, Madras, 22nd November 1860, page 305.

4. Field Officers will wear their distinctive badges on the collar.

5. The tunic as above ordered will be worn by all Officers of British and Native Infantry Regiments and by Staff Serjeants.

Passage.

No. 21.

6th June 1872.

Military Department, No. 56, dated 6th January 1872, to Quartermaster-General.

* S. O. 1865, page, 71.

The annexed extract from a letter, No. 294, dated London, the 22nd November 1871, from the Right Honorable the Secretary of State for India, to His Excellency the Governor-General in Council, is promulgated for general information and guidance, with reference to G. G. O. No. 471, dated 11th May 1865,* publishing the Royal Passage Warrant of 1865.

Para. 178, "Transport of Troops by Sea," to be modified accordingly :—

"2. Your Excellency will observe that the interpretation placed upon clause 3 at page 14 of the Royal Passage Warrant of 1865, entitles the families of officers doing duty with troops in every description of vessel to free passages.

"3. I have approved of this interpretation of the Warrant, and request that it may be adopted in India for the future.

"4. The messing rates laid down at page 6 of the Royal Warrant will be chargeable in this country."

Troopships—Rations.

No. 23.

The following Horse Guards' G. O. 95 of 1871 is published for information and guidance :—

"The form of mess certificate hitherto in use on board Her Majesty's troopships will in future be replaced by a

statement that the officers named therein were messed for the periods mentioned. This statement will be signed by the military commanding officer only. Any complaints which individual officers may consider that they have reason to make, in regard to their messing, will not be inserted in the certificate, but should be forwarded through the commanding officer, as pointed out in G. O. 5 of 1869, in the same manner as complaints upon other matters. In the case of a hired vessel, the mess certificates will continue to be signed by each officer, according to the form contained in Appendix 27 of the Regulations for Her Majesty's Transport Service."

Passages.

No. 29.

Military Department, No. 1413, dated 30th January, 1872, to the Quartermaster-General.

Under instructions from Government, it is hereby notified, that when a free passage is conceded to an officer who has been removed from the service, passage money up to the amount of the P. and O. rates will be granted, but only on the production of a certificate signed by the captain of the vessel or shipping agent, shewing that the passage has been actually secured.

Leave—Medical Department.

No. 33.

In continuation of G. O. No. * 311 of 1871, the following letter from the Government of India in the Military Department, No. 335, dated 7th February 1872, to the Adjutant-General, is published for general information :—

" With reference to the letter from your office, No. 2724-E, dated 22nd December 1871, relative to the procedure to be observed in the grant of leave to medical officers of the British Service holding appointments in India, the tenure of which is limited to five years, I am directed to acquaint you, for the information of the Right Honourable the Commander-in-Chief, that all leave in India to Administrative

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* Madras G. O. G. 5th December 1871.

Medical Officers of the British or Indian Medical Service should be granted by the Commander-in-Chief, the Government of India only granting them leave out of India on applications submitted through His Excellency."

2. Application for leave from the above officers will be submitted through the heads of their respective departments to the Commander-in Chief.

Passages.

No. 45.

The following extract from Bombay General Order, No. 104, dated 7th February 1872, is re-published for general information and guidance:—

" With reference to G. G. O. No. 785 of 1869, it having become necessary to prescribe what officers coming to Bombay, for passage to England, shortly before the commencement of the trooping season, should be detained to take their passage in the first troop ship, the Government of India has ruled that officers entitled to passage at the public expense and obtaining leave from and after the 1st September in each year, shall be required to proceed on the first troop ship leaving after their arrival in Bombay, which place they must of course reach within the time ordinarily granted to officers to proceed to the port of embarkation.

Barrack Department—Sanitary.

No. 96.

13*th June* 1872.

The Right Honourable the Commander-in-Chief is pleased to direct that one copy of the register of thermometrical observations in new and old standard barracks, ordered to be kept up in para. 6 of G. O. No. 299* of 1871 is to be furnished monthly to Deputy Inspectors-General of Circles for transmission to the Office of Inspector-General of Hospitals, Her Majesty's British Forces at Calcutta.†

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* Madras. G. O. C. C. No. 17, dated 11th March 1872.
† Madras.

List of Children.

On account of whom Payments have been notified by the receipt of Paymaster's Statements, &c., from 30th May up to this date for securing the following rates of pensions.

Names of Subscribers.	Children's date of birth.	Sex.	Rates of Pension secured.	To what period.	Payments how made.
J. B. Fleming, M.D.	8th February 1872.	Female...	Full ...	To D. or M., &c. ...	By Donations.
W. H. Harris, M.D.	7th February 1866.	Male ...	Full ...	*From 18 to 21 years...	
Do. ...	8th August 1867.	Male ...	Full ...	* Do. ...	

N. B.—The rates of Pensions marked thus * are additional to those previously secured.

MEDICAL FUND OFFICE,
FORT ST. GEORGE,
28th *June* 1872.

List of Wife.

On account of whom Payments have been notified by the receipt of Paymaster's Statements, &c., from 30th May up to this date for securing the following rate of Pension.

Name of Subscriber.	Date of marriage.	Rate of Pension secured.	Payments how made.
T. Beaumont ...	27th March 1868.	*Half ...	By Donation.

N. B.—The rate of Pension marked thus * is additional to that previously secured.

MEDICAL FUND OFFICE,
FORT ST. GEORGE,
28th *June* 1872.

CORRESPONDENCE.

NICHOLSON *v.* MACNAMARA.

To the Editor of the Madras Medical Journal.

SIR,—I shall, with your permission, take an early opportunity of replying to Dr. Macnamara on the whole case. In the meanwhile allow me to draw attention to No. 2 of the experiments detailed by Mr. Hamilton in his letter.

He ignited a small quantity, 0·1 gramme, of sodium sulphate with 0·5 gramme of ammonium chloride. Dr. Macnamara says in his paper that "about twice as much" is sufficient; Mr. Hamilton gives the reaction a better chance by employing five times as much ammonium chloride. The

mixture is dissolved, evaporated, ignited and weighed, and the result, Mr. Hamilton says, is "conversion partial" as evidenced by the presence of chlorides and a loss of ·004 gramme weight. Now it is easy to calculate that had the conversion of sodium sulphate (eq. 142) into sodium chloride (eq. 117) been complete, the residue should have weighed ·0823 gramme, giving a loss of ·0177 gramme, so we find that the conversion was so partial that it only affected 22 per cent of the sulphate operated on.

If this experiment does not prove my case, it certainly disproves Dr. Macnamara's.

I thank Mr. Hamilton for making these experiments; facts are what we want, not vain quotations from text-books. But I would recommend him in future proofs of processes, to assure himself of the purity of his reagents and to give evidence thereof; in the present case no assurance is given that the sodium sulphate was pure and that the ammonium chloride did not contain fixed chlorides.

I am, &c.

EDWARD NICHOLSON.

WALTAIR,
15*th June* 1872.

GUMS AND GUM-RESINS.

To the Editor of the Madras Medical Journal.

SIR,—In my notes upon "The gums, gum resins, &c.," published in your Journal for June, by some error, or by the ingenuity of the printers' "devils," the people of this District are called Roeys instead of Koeys. I was mistaken about the supply of gum from the *Sterculia Urens*, it is procurable only during the cooler months of the year; and although the natives here say that the *Terminalia Arjuna* produces gum spontaneously in very large quantities, yet I have been able only to obtain it in small lumps.

Your obedient servant,

H. S. HAZLETT,

Assistant Surgeon.

DUMAGUDEM,
16*th June* 1872.

TO CORRESPONDENTS.

Inspector-General, Indian Medical Department.—Honorary Sub-Assistant Surgeon M. JAGANATHUM NAIDOO.—MR. JOHN LANCASTER.—*Received with thanks.*

BOOKS, &c., RECEIVED.

The Medical Record, *March 1st.*

The Medical Press and Circular, *May 1st, 8th, 15th, 22nd, 29th.*

The Doctor, *May 1st.*

Journal des Connaissances Médicales, *May 15th.*

Spurious, Feigned, and Concealed Pregnancy, by Thos. Moore Madden, M.D.

The Secretaries ROYAL MEDICAL BENEVOLENT FUND SOCIETY OF IRELAND, *acknowledge with many thanks receipt of the following Subscription and Donation.*

R. V. Power, A.B., M.D.	1872-73.	Rs. 10.
A Friend	,, ,,	5.

THE MADRAS

MONTHLY JOURNAL

OF

MEDICAL SCIENCE.

No. XXXII.—AUGUST, 1872.

ORIGINAL ESSAYS.

ART. VI.—*Report on the prevalence of Dengue in the Cantonment of Quilon, during the month of May* 1872. By W. H. MORGAN, Esq., Surgeon, 23rd L. I.

(*Communicated by Inspector General, I. M. D.*)

GIVEN the prevalence of Dengue in Cochin for some weeks, and in Alleppey for some days prior to its appearance at Quilon, its introduction into the last-named station could be easily explained. The existing arrangements in small stations do not permit of any deduction being drawn from atmospheric or meteorological causes, for the simple reason that no meteorological observations are registered in the hospital or elsewhere for want of instruments. We can, it is true, sometimes associate certain classes of complaints with ordinary atmospheric phenomena, but in searching for such to be embodied in a report on a form of fever which has never visited this station, the absence of a daily record of the direction and force of the wind, of the thermometrical and barometrical readings immediately prior to this outbreak cannot but be regretted. The rainfall during the early part of the year was below that of the preceding, as will appear from a comparison of the quantities guaged from January to May 1871, which are placed in juxtaposition

with the corresponding months in 1872 in the subjoined table.

	1871	1872
January	... 1·600	... 0·000
February	... 0·700	... 2·850
March	... 2·700	... 0·600
April	... 8·900	... 5·500
May	... 5·900	... 5·500
	19·800	... 13·100

I have no information regarding the first appearance of dengue in Cochin, but an officer of this regiment who reached Quilon on the afternoon of the 23rd April told me (some weeks after its appearance among the sepoys and their families) that he had put up for about 24 hours in the Cochin dawk bungalow, where he saw an European engineer with the complaint. One of this officer's servants contracted fever before leaving, and as he travelled in the same boat as his master, the latter was seized a few hours prior to his arrival at Quilon. Subsequently all this officer's servants suffered, and the man who had been ill at Cochin went to his relatives in the regimental lines. Knowing what I do of Dengue, I think it most likely that this case served as a centre for the dissemination of the disease. It early attacked the Mess-writer and servants, and this could be explained by the likelihood that the servants of the officer above referred to, who had or were getting dengue, were employed in procuring supplies for their master from the Mess-house. I have recently seen an old hanger-on of the mess in the service of this officer, and it is as likely as not that if this man did not actually go to the Mess premises for his meals he had them brought to him by his relatives who reside there. The regimental dhobies next suffered and the possibility of infection from the clothes of the officer and of his servants should be borne in mind, as it is an every-day occurrence for those arriving at a station to send their dirty clothes to be washed. These dhobies being employed by the sepoys it is natural to suppose that during the time they (the dhobies) were stricken with fever, quantities of foul clothing were lying untouched in their huts which on their recovery would be hastily washed and distributed to the owners, carrying more or less of the fever germs or other source of infection to the people in the lines.

Sub-Assistant Surgeon Martin of the Travancore Medical Service to whom I am indebted for particulars of the commencement and progress of dengue at Alleppey (54 miles north of Quilon) writes, "The first case that came under notice occurred on the 21st April last and the subject was a lady resident on the beach, who was suddenly attacked while in church. Her ayah was similarly attacked on the following day. The disease then gradually spread among the native and East Indian population. Meanwhile our resident Minister arrived from Cochin with the disease and so did our Telegraph master," and after the former, several of the servants, teachers and pupils of the Mission sickened and the complaint spread to other parts of the town and the adjacent villages.

With a view to ascertain the order in which cases of Dengue appeared in the Regimental lines, I examined a hundred men, but the information obtained is of that dubious character that it would be a useless waste of time to continue the inquiry. The sepoys could not tax their memories for the required dates, and although it is notorious that the families were first attacked, seventy-five individuals declared without the slightest hesitation that they were the first sufferers in their huts. It seemed singular too that the men just about this time should not have had any communication with people who had been to Alleppey or Cochin; while in point of fact there is daily communication between these stations and Quilon. One private who had been on 3 days' leave to Trevandrum stated that he was taken ill five hours after leaving Nadayara (13 miles south of Quilon) in the transit boat. This boat touches at all stations, and as a cheap and expeditious means of conveyance it is largely used by natives travelling from Trevandrum to Trichoor and *vice versâ*. The possibility of its having been used by cases of dengue is worthy of note.

Having once obtained a footing in the lines the dissemination of dengue became inevitable. In Quilon as at other stations the sepoy huts are placed in rows, adjoin each other and the back of one enclosure abuts on that of another. The huts consist of a frame-work of bamboos covered with cocoanut leaves, the floor is not raised above the surrounding ground and, excepting a door of entrance, there is scarcely any other means of ventilation. The wind may now and then rush in where the cocoanut leaves are not fastened and

where this omission permits of a slight flapping of the leaves. The space per individual in a hut is dependent upon the number of inmates of each. Taking a fair example I give the dimensions of the hut of an old non-commissioned officer with such other particulars as are considered necessary. Length 27 feet × 12·5 feet breadth = 337·5 feet superficial area, × 11·75 feet height = 3968·626 feet cubical space. Dividing these figures by 8 the number of inmates we obtain 42·1 of superficial and 496·078 feet of cubical space per occupant. Within 20 feet of this hut lives the son of this non-commissioned officer and the measurements of his hut are 15 feet length × 12 feet breadth = 180 feet superficial area × 11·75 feet height = 2115 feet cubical space. Dividing this by 5 the number of inmates the superficial area per individual would be represented by 36 feet and the cubical space by 423 feet. The children of this family sickened one after another, nor did the elders escape for all had Dengue within a short time. The daughter-in-law within a few days of her confinement suffered, as well as her infant when only 3 days old. Neighbours visiting such a family would contract the disease and they in their turn affect others who may share their huts. Isolation would have been beneficial if the character of the ensuing epidemic had been foreseen, but very little experience with a native regiment would show that the ordinary measures resorted to in a British regiment for the repression of out-breaks are almost impracticable in the native army. My application for tents was at once met with a request that I should certify whether the disease was or was not infectious. In the face of all that was seen it was impossible to certify that the disease was not infectious, and here the matter dropped; although one may think it a more serious matter that men should infect one another than that tents should be infected by them, no amount of thought on the subject would help one to tents, the issue of which is hedged in with restrictions of various kinds. Had tents been issued, only such of the effective men as were sick would be accommodated in them, while their families would still remain in the lines. As the sick of a native regiment diet themselves there would be constant communications between the tents and the lines, as the sick sepoy would have his food brought to him from his hut. A cup of broth or congee might, on an emergency, be prepared for him in hospital but with the existing hos-

pital servants (2 sweepers) it would be impossible to feed any number. Simultaneously with the application for tents, I requested that two vacant public buildings, viz., the Staff Sergeant's quarters, and arrack godown should be whitewashed and cleaned. The latter was ready by the 12th May and the former on the 11th May. The dimensions of these buildings will accompany this report. The practice during the outbreak was to place as many new cases as we could in the regimental hospital for a day or two, directly there was any improvement these cases were transferred to the Staff Sergeants' quarters, and they in turn were shifted to the arrack godown, whence they were discharged or allowed sick leave to the lines. Notwithstanding the additional accommodation it was at one time impossible to find room for all effectives who were taken ill and many were allowed to return to the lines, either calling for medicine at the hospital twice a day or having it taken to their huts by the Hospital Assistants sent down temporarily to the regiment. The men who were so allowed to remain in the lines were the native officers, commissioned and non-commissioned, some of the well-conducted buglers and musicians, the older sepoys and such others whose services were required in their huts owing to the illness of their families.

That the disease was infectious will, I think, appear from the following facts. It is impossible at present to ascertain where the Hospital Apprentice could have contracted it, for his statement of symptoms accords with those noticed of dengue; but very shortly after him first one toty and then another suffered, and up to the time of their being taken ill themselves they were in attendance on the sick. Next came Hospital Assistant Thaviah, No. 861 who was taken ill on the 9th of May. Hospital Assistant P. Narrainswamy, No. 623, who arrived from Trichinopoly on 17th of that month was taken ill on the morning of the 22nd, and two days subsequently Hospital Assistant Goolamnubby, No. 649. The Hospital Assistant from Cochin escaped; but he informed me that he had had dengue at his station before coming to Quilon. Five hospital havildars who relieved each other in succession were taken ill. The first man Sheik Davood had dengue on the 15th May, 2 days after he had joined; Swamy Naicken on the 17th, two days after the former. Oodajewan fell ill on the 20th, 12 hours after he had joined; Manuel on the 21st, 8 days after he had joined; and

Iyaswamy on the 26th, after having done duty for 5 days: nor did the hospital orderlies escape, for I have a note of four of these who reported sick on the 18th, 20th, 22nd and 24th May. Of patients who were in hospital with other complaints two were taken ill on the 7th and 9th May, and the last might be amplified but that enough has been said to demonstrate the position advanced. On the evening of the 10th May the Adjutant who had been all day in his office (but who had like the other officers visited the hospital on various occasions since this outbreak) was attacked, and he attributed it to having occupied the same room as his writer who had suffered from dengue a few days before. On the following evening this officer's wife was seized and it has since attacked their ayahs, the children happily escaping. The Adjutant of the regiment would naturally see more of the sepoys and others from the lines than other officers, and the immunity of the latter may be due to their being better able to resist the advent of disease than the comparatively ill fed and badly housed population of the lines.

The data for forming an opinion regarding the period of incubation are not striking, but the following particulars are merely given for what they are worth. The first Hospital Assistant from Trichinopoly was taken ill within 5 days from his first contact with dengue cases. The second (Goolamnubby) within 7. The Adjutant's daily visits to the hospital deprive the fact of his having been in the same room with a man convalescing from the disease, for some hours previous to his being taken ill, of the significance that might otherwise be attached thereto. I may also mention that on pay-day (the 6th May), as the Adjutant had to see some men in hospital about their accounts, his wife accompanied him into the building, where there were some men suffering from dengue; and this lady, as noticed in the preceding para., had dengue 5 days later: but as she was in constant attendance on her husband for about 24 hours previously it is more likely that the disease would have been contracted from this source. Havildar Hoossain Khan, who returned to Quilon from the Eye Infirmary at Madras on the 14th, was ill with dengue on 18th May.

It may be necessary to remark on the health of the regiment and sanitary condition of the cantonment generally about the period of this outbreak. An index of the former

is afforded by an abstract of the admissions and discharges of the 23rd Regiment for the month of April which is subjoined.

Table showing the number admitted and discharged during the month of April 1872.

Diseases.	Admitted.	Discharged.	Remarks.
Fevers. Chicken pox ...	1	...	
Fevers. Febricula ...	1	...	
Cholera ...	1	...	Admitted 7th April,
Rheumatism ...	1	1	died on the 8th.
Coryza ...	1	1	
Conjunctivitis ...	4	3	
Constipation ...	1	...	
Abscess and ulcers...	3	5	
Skin diseases ...	4	3	
Fissures of the heel..	1	...	
Sprain ...	1	2	
Typhlitis ...		1	Remained over in March, transferred on
Total...	19	15	S. C.

Fallen leaves, splashes of water in the neighbourhood of wells, and the mud pies with which native (like other) children amuse themselves might here and there be detected by the eager searcher for surface impurities; but in more essential particulars, such as a good and abundant water supply, general cleanliness of the roads and huts, the disposal of filth and the conservancy of the cantonment generally, the existing arrangements are as good as could be expected with the means at our disposal. The civil station may(and probably is) different; but any nuisances in the immediate vicinity of the cantonment are brought to notice and remedied. If the progress of dengue be due to defective sanitary arrangements in the cantonment it is marvellous that the civil station into which no sanitary establish-

ment has as yet been introduced should have escaped with comparative immunity. In much that relates to the essentials of sanitary order the cantonment is a-head of the town beyond military limits; the man who reports the cantonment dirty would consider the native town dirtier still, but as I have just said it is remarkable that dengue should have attacked the sepoys and their families in larger number than the civil population. The cases of dengue among the out-patients of the Sirkar hospital amounted to 60 in the month of May, which is in remarkable contrast with the hundreds who were taken ill in the lines as subsequently shown. According to the usual practice among cultivators, the paddy fields in and about the cantonment were ploughed and manured about the time that dengue broke out, but after due reflection I cannot say that I consider this as influencing the out-break. The same preparations of the soil have occurred year after year, but there has been no epidemic; nor has there been an excess of fever cases in the immediate neighbourhood of these paddy fields over other parts of the cantonment. My residence is surrounded by them, but neither I nor any members of my family have suffered: of my servants the only persons attacked were an ayah who had her food daily brought from the lines, and another female who, I suspect, had her relatives suffering from dengue. One of my orderlies was taken ill after he had been on duty for a few hours at my house, but he lived in the lines and undoubtedly contracted the disease in that locality. With the exception of the officers mentioned in previous paragraphs the remainder and their families have escaped. Assuming for the sake of argument that the epidemic was mainly due to defective sanitation in the cantonment, it would not be easy to show why the same should disappear or be dying out, without any sanitary improvements great or small being carried out in the interim. We all know that epidemics have their period of invasion, maturity and decadence; but it would scarcely be fair to jump at the conclusion that because an epidemic such as this has broken out at any station defective sanitation must be at the root of it.

The progress of the epidemic will be gleaned from the following tables. The first gives all the cases admitted into hospital and returned as "febricula" from the 1st to the 10th of May. No return of sick in the lines was obtained till the 8th, hence the columns showing these cases up till

that date are left blank. By a mistake of the orderly havildars who imagined that no return was required on the 9th the figures for that date are wanting, but from the 10th up to the end of the month returns of all sick from dengue are rendered in the second table. No recoveries of sick in the lines were reported on the 8th, 9th or 10th.

TABLE I.

Showing admissions from 1*st to* 10*th May* 1872 *with the number reported sick in the lines on the* 8*th and* 10*th May.*

		1 May	2 "	3 "	4 "	5 "	6 "	7 "	8 "	9 "	10 "	Totals.
Effective men		2	2	3	5	5	5	5	11	13	13	64
Cases in the lines.	Males	..	...	...	...	...	...	...	10	...	2	12
	Females	...	...	...	...	...	..	...	31	...	17	48
	Male Children	...	...	...	...	...	...	...	18	...	23	41
	Female do.	...	...	...	...	...	...	...	18	...	14	32
	Totals...	2	2	3	5	5	5	5	88	13	69	197

TABLE II.

Showing the admissions from dengue and those reported sick in the lines from 11*th to* 31*st May* 1872.

		May 11	12 "	13 "	14 "	15 "	16 "	17 "	18 "	19 "	20 "	21 "	22 "	23 "	24 "	25 "	26 "	27 "	28 "	29 "	30 "	31 "	Totals.
Effective men		29	30	30	34	31	39	52	31	16	28	15	12	6	7	8	1	5	...	1	...	...	375
Cases in the lines.	Males	3	1	5	2	2	3	2	2	2	...	...	...	2	...	...	...	...	...	...	...	...	24
	Females	27	15	20	3	25	13	12	15	8	5	1	10	8	2	4	...	2	...	4	1	...	175
	Male Children..	28	10	15	21	19	11	8	9	8	5	1	18	2	1	3	...	1	...	3	...	...	163
	Female do. ...	18	10	9	8	9	5	10	8	4	3	...	11	1	3	3	...	2	...	...	1	...	105
	Totals...	105	66	79	68	86	71	84	65	38	41	17	51	19	13	18	1	10	...	8	2	..	842

TABLE III.

Showing the recoveries from dengue from 11th to 31st May 1872.

		May 11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Totals.
Effective men		8	3	6	11	10	19	52	59	15	48	44	38	35	23	20	12	16	10	5	2	...	436
Cases in the lines.	Males	...	3	3	3	1	5	2	2	1	1	4	3	...	...	1	1	...	1	...	1	...	32
	Females ...	4	14	8	18	4	11	12	8	8	15	22	25	14	11	2	12	8	21	31	19	...	267
	Male Children...	6	22	5	12	4	4	8	10	7	3	20	26	3	10	4	8	11	9	18	13	...	203
	Female do. ...	3	15	6	14	3	4	10	1	4	1	9	11	1	5	2	5	4	9	10	16	...	133
Totals...		21	57	28	58	22	43	84	80	35	68	99	103	53	49	29	38	39	50	64	51	...	1,071

In my report of the 10th May I entered into a detail of the symptoms exhibited by the patients who up to that time had been admitted into hospital. That account is substantially correct; but having seen hundreds of cases since I shall now proceed to describe the symptoms with such additions as have been divulged by further observation. The greater number of cases declared that they went to bed apparently well, but woke up about two or three in the morning with a hot skin, and when admitted into hospital a few hours later the temperature in the axilla in the recorded cases ranged from 99° to 103° F. During the prevalence of dengue several sepoys who took their tour of duty in the morning reported sick during the day. I remember a sentry at the hospital who was on guard at my evening visit being struck down with fever before that visit was concluded. In addition to the heat of skin there would be a pulse varying from 78 to 108 and a countenance indicative of utter helplessness and prostration. After a little experience we could from the appearance of a case, tell at once whether it had been of one, two or three days' standing; on the first day the sick would throw themselves down anywhere, outside the hospital, on the verandahs, on cots or on the floor, racked with pain in more than one of the joints, large or small. Hindoo and Mussulman, regardless of caste or creed, jostled one another in the common tortures of dengue, and until the temporary hospitals were ready it was difficult to effect an

entrance into the hospital, much less to take notes of cases for a special report on the epidemic. The fever lasted from one to 3 or 4 days, with occasional remissions during the first or second day and a distinct intermission on the 3rd or 4th. Pain was a concomitant of the pyrexia in all the cases; head, neck, arms, elbows, wrists, chest, back, hips, thighs, legs, ankles, the tips and the extensors of the fingers, the ball of the thumb, the soles of the feet and the extensor tendons of the toes all suffered, but all these joints were not affected at the same time. A patient informed me that she had felt whitlows in all the fingers; and for days after she recovered she had hardly strength to place her feet on the ground and when they were down she had hardly power to move them. The more demonstrative of the natives groaned with their pains. Earache was noticed in 2 cases, headache in nearly all, about the second day of the fever; more especially in those cases whose habits were supposed to be intemperate. Sore throat (tonsillitis) was by no means a constant or a prominent symptom, but pain about the throat existed in 3 per cent. of the cases. On an analysis of 300 cases 2 per cent. had sore eyes (conjunctivitis). A few of the first cases had ordinary catarrhal symptoms. Two men complained of something like ptyalism, one individual returned to hospital a few days after the febrile symptoms had left him with swellings of the glands in the groins. The tongue of patients presented one or more of the following appearances; (1) a thick coating of yellow fur on the dorsum, (2) a slight whitish fur on the dorsum with red tip and edges, (3) glazed and red. Vomiting was present in 12 per cent of the cases; it was readily excited by the diaphoretic mixture used. Nausea was frequently complained of. There was no appetite, as might be expected, in almost every case; and for days afterwards there was no inclination for food among the convalescents. 8 per cent. of the analysed cases complained of epigastric pain. The bowels were occasionally confined, but yielded readily to such aperients as rhubarb, castor oil, jalap or podophyllin. Diarrhœa existed in 17 per cent. of the cases, but a dose or two of an astringent mixture or powder soon arrested it. The urine was examined in 84 cases (several times in the same case); the specific gravity ranged in these from 1004 to 1030, the reaction generally acid. There was no trace of albumen in any one of these.

The rash. From the onset of this out-break the cases

were examined for the initial or terminal rash. My instructions to the subordinates were precise on this subject and I have every reason to believe that they were not neglected. It should be remembered that my patients and their families have for years been accustomed, to a constant irritation of the skin from scabies and, the fugitive character of the eruption in dengue being considered, it is in the highest degree probable that the people themselves were unaware of any appearance worth mentioning. On the 11th May I was called to the wife of a bugler, who had fever for some days, and learnt that a rash in irregular patches had appeared on the previous night, on the face, trunk and extremities; and on pressure the patches disappeared for a time ; the skin generally was somewhat rough to the touch. Just after leaving this woman, I saw a bugler whom I had discharged from hospital that morning and who had discovered a rash on returning to his hut. It consisted of irregular patches on the right shoulder and arm, left leg, in the palms of both hands (and in this situation in reddish spots) and on the back. In another case, seen either on the same day or a day after, I observed a papular eruption on the back of a Mussulman, looking like prickly heat except that the papules were distinct and not aggregated together as is usual in lichen tropicus. On the evening of the 11th I saw a distinct and copious rash on the chest of a European patient (who had fever during the day and on the night preceding) and, but for the abrupt disappearance of much of it by the following morning, I should have supposed that it was prickly heat. The eruption was papular in all the above cases. In another case the patient showed a reddish flush over the prominent portion of the cheeks. From an analysis of 300 of the cases that passed through hospital it would appear that a rash was present in about 11 per cent., but it is not possible now to state in how many the same was initial or terminal or both.

It would at present be premature to report on the sequelæ of dengue but a supplemental report will, if required, be submitted hereafter.

Treatment.—Aperients were administered when required ; the sufferings of men compelled to move about for the purposes of nature during the first day or two of dengue are pitiful and, if there be any prospect or likelihood of the bowels acting within a reasonable time, it is better to

wait. The aperients used were rhubarb, castor oil, the infusion of senna and sulphate of magnesia, jalap and any ordinary aperient pill.

Diaphoretics were prescribed during the hot stage, the ordinary diaphoretic mixture containing the solution of acetate of ammonia, nitrate of potash, nitrous æther and camphor water, with or without the addition of a couple of minims of the tincture of aconite to each dose, answered very well. When some of the ingredients required for this mixture were exhausted diuretics were used. Perhaps the cases would have done quite as well without either.

As soon as sweating set in and there was a likelihood of a remission or intermission the sulphate of cinchonidine (of which there was a small quantity in store) or of quinia was given in a mixture with dilute sulphuric acid and this was continued for a day or two. On the 18th May the drugs enumerated in the margin, which had been promptly sent down by banghy from Madras by order of the Inspector General, were received and a second supply consisting of Antimonium tartaratum, Calomel, Cinchonæ pallidæ pulvis, Cinchonidini sulph., Jalapæ pulvis, Liqr. arsenicalis, Potassæ nitras, and Quiniæ sulphas, which came in the usual way through the Commissariat, reached this on the 10th June.

Jalapæ Pulvis.
Podophylli Resina.
Quiniæ Sulph.
Tinct. Warburgh.

From the above sketch of treatment, it will be seen that cases of dengue were treated like ordinary intermittent fever. It is not for me to say whether they would have recovered without any medication at all; at any rate I did not hazard the experiment, seeing that so liberal a supply of drugs of acknowledged utility was within reach. In the earlier cases, and till all the rhubarb, calumba and soda were expended, these were prescribed as alteratives. Chiretta was substituted for calumba when the supply fell short. The most urgent symptom of dengue, pain, we endeavored to meet by liniments till every available liniment was disposed of. Having but a small supply of the tinctura belladonnæ (obtained from the sirkar hospital) we were compelled to use it carefully, with very good results. I would here draw attention to the value of belladonna in the experience of Dr. T. Edmonstone Charles of the Bengal Medical Service given in the Indian Medical Gazette for June 1872. He usually prescribes ten minims of the succus or tincture to be repeated every hour till

relief is obtained, or the third dose has been taken. After an interval of a few hours it may be given in the same way if the suffering again increases, more than two drachms being seldom required in any case. A third or half a grain of the extract, in pill or mixture two or three times a day, answered well; and he found nothing to equal belladonna in relieving not merely pain, but the restlessness, distress and anguish, which quite apart from pain are often very prominent features of the attack. Sinapisms were specially useful in some of the chronic pains complained of by the sepoys, and where they persisted for any length of time we had recourse to dover's powder and nitre, colchicum and magnesia &c. All the adults that came under hospital treatment have recovered and there have been no deaths among grown-up people in the lines; but I regret to add that the disease proved fatal to six children. Three of these were due to convulsions and were reported by the Hospital Assistants; three were not under European treatment; and in one case, seen by Dr. Cook and myself, the child (9 years old) was moribund when our assistance was required. As dengue appears to have shown itself in other parts of the Presidency it may not be amiss to refer to Dr. Charles' remarks on the succus conii in convulsions, which will be found in the number of the Indian Medical Gazette above referred to.

Summary.—Dengue was imported into Quilon either from Cochin or Alleppey, at both which stations it had appeared in an epidemic form prior to its manifesting itself in this cantonment. A hundred of the first cases were examined with a view to ascertain how the disease spread in the lines; but the enquiry was unsatisfactory as the sepoys could not tax their memories for the required dates: a large number stated that they were individually the first sufferers though it was currently believed that their families had the disease first. Communication with people from Cochin or Alleppey (though of daily occurrence) could not be traced during the enquiry above mentioned.

Having once obtained a footing in the regimental lines the disease spread. Dissemination was most probably owing to the manner in which the huts are built, to insufficient accommodation in them; which, though comparatively of little consequence when the inmates are in health, would become of graver import during the presence of an infectious disease.

The infectious nature of the disease is supported by facts observed in hospital and elsewhere.

Data for forming an opinion regarding the period of incubation are not conclusive; instances are given for what they are worth.

Health state of regiment and sanitary condition of the cantonment previous to outbreak of dengue are considered.

Progress of the epidemic. Total number of effective men (as per entries in the admission and discharge book)—admitted 430, of which 276 were Hindoos 126 Mussulmans 28 East Indians and Native Christians—all recovered.

Cases reported in the lines—36 men, 223 women, 204 male children, 137 female children. Total 600; all the adults recovered, 6 children died.

Symptoms detailed. Pyrexia, temperature ranging from 99° to 103° F., pulse from 78 to 108, duration of fever 3 to 4 days, pain in one or more of the joints, large and small, invariably present. Ear-ache in two cases, ptyalism in the same number. Headache in nearly all, sore throat not a common or prominent symptom. On an analysis of 300 cases 2 per cent. had conjunctivitis. Vomiting in 12 per cent., diarrhœa in 17per cent. Urine examined in 84 cases was always free from albumen. Rash present in 11 per cent. of the cases, but it is not practicable at present to distinguish in how many it was initial and in how many final. Average number of days in hospital of a case of dengue, 6·2.

Treatment.—Aperients, with caution to avoid inflicting needless pain, diaphoretics during pyrexia, diuretics when the former were exhausted. Quinia, cinchonidine &c. subsequently. Calumba, rhubarb and soda as an alterative. Local applications to seat of pain; nothing to equal internal administration of belladonna, in relieving not merely pain but restlessness, distress and anguish. Reference to experience of Dr. T. Edmonstone Charles on this point, and on the administration of large doses of conium in arresting convulsions arising in the course of dengue.

Dimensions of the buildings occupied as temporary hospitals during the prevalence of dengue.

Number of ward.	Particulars.	Length.		Breadth.		Height m. *		Cubic. Space
		Feet.	Inches.	Feet.	Inches.	Feet.	Inches.	Feet
	SERGEANT'S QUARTERS.							
	Ground floor.							
1	North East room ...	31	...	13·25	...	m 12	...	5022
2	East room ...	19·75	...	8·75	...	9·75	..	1684·92
3	South Centre room ...	20	...	17·5	...	9·75	...	3412·5
4	North do. do. ...	20	...	11·75	...	9·75		2291·25
5	West room ...	19·75	...	8·75	...	9·75	...	1684·92
6	North West room ...	13·25	...	8	...	m 12	...	1272
	Second floor.							
1	Centre room ...	30·25	...	20·5	...	m 16	...	9922
2	North West room ...	20	...	9	...	m 10	...	1800
3	Do. East room ...	20	...	9	...	m 10	...	1800
	Arrack Godown.							
1	Main Ward ...	130·5	...	28	...	m 13	...	47508

* *m.* denotes mean height.

Art. VII.—*A case of Ascites of three years and five months standing; treated by the juice of Solanum Nigrum; Recovery.* By M. Jaganathum Naidu, Palace Honorary Sub-Assistant Surgeon, and teacher of Vernacular Medical Class, Mysore.

Pondurungah, Brahmin, aged 14 years, was brought to the Dispensary in October 1871, by one of the Palace Native Doctors, to have the operation of Paracentesis Abdominis performed.

On enquiry I obtained the following history of the case:—Some time back the boy, it would appear, had intermittent fever of the quotidian type, for which he underwent treatment by a Native Practitioner; and while under treatment the fever changed in character, the paroxysms becoming irregular and continued so for a period of about 3 months. Emetics, purgatives, diuretics &c., were administered by the Native Doctor, without avail. Four months after the appearance of the fever the abdomen began to enlarge.

After a year, the mother of the lad stated that the distress of the abdominal complication was so urgent that she was obliged to ask another medical man to do something for her son. The medical man was G——l, who is considered to be an able physician among the Palace Native Doctors. This practitioner, having considered the abdominal extension to be caused by a tumour within, cauterized the abdomen in three places over the left hypochondriac and lumbar regions. Under this course of treatment the boy derived no benefit; on the contrary some symptoms of general dropsy supervened; the ulcers resulting from the canterization added much to the sufferings of the lad and were three months in healing.

The mother finding her son getting worse placed him under another Palace Doctor B——m Row. This practitioner administered to his young patient purgatives and diuretics and placed him on low diet. The repeated purgation and the free action of the kidneys resulted in some temporary relief to the boy. The abdomen became large again, the symptoms of distress recurred and the Native Doctor fearing a fatal termination brought his young patient to the Dispensary, and requested me to perform the operation above indicated—Paracentesis Abdominis.

Upon examination I found the abdomen greatly and uniformly enlarged; there was distinct fluctuation; in the upper zone there was resonance on percussion; dyspnœa was urgent; the upper part of the body was comparatively wasted; the countenance was anxious; the legs and feet were œdematous and pitted on pressure; urine scanty, bowels regular; the appetite was normal, but patient did not take much food as it distressed his breathing; the pulse was small and weak; the tongue was natural. The patient was free from fever. On exploring the abdomen with a needle serous fluid escaped.

Being perfectly satisfied that this was a well marked case of ascites with partial anasarca, I suggested that the boy should be placed under my care for a few days, before I could yield to his wish, as I meant to try the effects of the common plant, Solanum Nigrum, from having met with favorable results in two are three cases of anasarca in my private practice among my countrymen. The Native Doctor gladly accepted my request; but expressed his doubts about the success of my trial; and then I prescribed the following:—

℞ Extracti Solani Nigri 3i.
To be given twice a day.

On the 2nd or 3rd day the medicine commenced to act freely, both on the bowels and kidneys, without causing any apparent corporeal debility. The vegetable extract after some days' administration failed to act satisfactorily on the patient and consequently the dose was increased gradually up to two drachms two or three times a day according to circumstances.

About two weeks after the commencement of the medicine a decided change for the better was observed; the abdominal tumour commenced gradually to decrease; the respiration became free, the œdema of the legs disappeared and the patient was then able to take more food than before without experiencing any distress. Pleased highly with these changes, the boy's mother begged of me to continue the use of the extract some days longer. The extract was persevered in for upwards of a month and, now that it was found difficult to procure the plant in sufficient quantity for daily use, the concentrated juice was ordered to be given in doses of 2, 3 or 4 ounces daily according to effects manifested on the system. The extract appeared to take better effects in this boy than the concentrated juice of this shrub.

With the internal remedy the boy was allowed to have his daily warm water ablution according to the usual caste custom, and was ordered to wear an abdominal bandage so as to give a support to the relaxed muscles of the belly. The administration of the medicine was continued for upwards of two months with occasional intermission. After the disappearance of all the dropsical symptoms, there remained a sort of puffy swelling in the hypogastric region, evidently resulting from the thickened condition of the greater omentum. The application of Iodine Liniment to the part affected, with pressure and occasional purgatives, was ordered. He passed a great deal of mucus for several days. The omental thickness remained in spite of an active treatment for a considerable period.

On examining the abdomen of the patient, after it had been reduced to its normal size, the spleen was felt to be a little larger than usual; the liver was normal.

The lad has now perfectly recovered from his dangerous malady by the blessings of the Almighty and he has nothing at present to complain of except his voracious appetite and a peculiar desire for table delicacies.

Remarks on the above case.

This is a severe form of dropsy of the peritoneum with partial anasarca, evidently caused by affection of the omentum and enlargement of the spleen resulting from an attack of chronic ague. This complaint, under the care of Native practitioners, resisted all available medical treatment, and at last little or no hopes were entertained of the recovery of the boy. To give him the last chance of life, the medical attendant of the patient proposed the operation of Paracentesis Abdominis. Prior to the execution of this a suggestion for the trial of the effects of the common indigenous plant, the Solamun Nigrum, (since the Native medical treatises recommend the plant highly in the management of dropsical complaints) was made. Hakeems and Hindu Doctors alike consider it to be the sovereign remedy for the above complaint. The trial has no doubt proved a decided success and saved the life of the poor Brahmin boy.

Having experienced in practice that almost all the cases of ascites that come under my cognizance, in which the usual course of treatment was pursued, terminated fatally, I have had a desire for some time to depart from the established rules of treatment in European books

for this affection, and to try those which the Hindu medical treatises recommend; but my position was such as to debar me from doing things as I would wish. In one instance I was actually accused of encouraging quackery, although my grounds of action were those above mentioned, and were allowed by other members of the profession to be fair and commendable.

After my liberation from these restrictions, I turned my attention to the careful study of Native medical treatises and of the indigenous medical plants. In my repeated trials I have found some of these plants to possess extraordinary virtues and really valuable therapeutic qualities. I have collected several interesting cases in my private practice and as an example I have brought the above to light, the rest I have reserved for a future occasion. I humbly beg the liberty of stating the fact, that the entire ignorance of the Native Doctors in Pathology brings discredit on their most useful nostrums by their improper application. I am convinced from personal experience that if a proper basis were afforded (as by translations of the Principles of Medical Science into the Vernacular) to the Native Doctors, who are at present held in undisguised disrepute, their accumulated experience and natural ingenuities would soon render them notable and highly useful members of the medical profession. I will however desist from further remarks, as it is my intention to treat the subject at a fuller length hereafter.

In the management of dropsical affections in their earlier stages, diuretics and purgatives are regarded as our sheet anchors and subsequently we rely on tonics so as to counteract vascular relaxation and give to the system generally a healthy tone. To produce these several actions in the human frame simultaneously, practitioners prescribe medicines, so as to obtain their actions conjointly. The one great advantage that the juice of this plant enjoys over other drugs is that it alone produces all the required effects viz., diuretic, purgative and tonic; other cathartics and diur etics produce a certain amount of prostration in the syste m after their full physiological action has been produced, but no such untoward symptom occurs under the use of this plant, which is an additional advantage to be observed. As the fluid is drained away from the system, the vessels regain their tonicity and the exudation of serous fluid is thereby prevented.

In conclusion I beg to draw attention to the fact, that

TROPICAL
DISEASES
LIBRARY

EUBLEPHARIS HARDWICKII Gray

or

BISH KOPRA OF SCINDE

PLATYDACTYLUS GECKO Linn

or

TUCKATOO OF BURMAH

had I not declined the usual course of treatment (after the experience of two or three cases) I would certainly have lost my young patient some months ago. I may venture to add that the marked success in my hands that has invariably followed the exhibition of this drug may warrant its use being adopted in desperate cases of ascites.

Art. VIII.—*The Tuckatoo and Bish Kopra.* By John Shortt, M. D., &c., Surgeon, Superintendent General of Vaccination, Madras Presidency.

The two following lizards have been sent to me for examination from the report that they are poisonous. A distinguished naturalist has already stated that "a venomous lizard is an anomaly, unknown in creation." One is the Tuckatoo of the Burmese and the *Platydactylus gecko*, Linn.; (*Gecko Guttatus*, Syn:) of naturalists; with this specimen I received the following account.

"This is the Tuckatoo of the Burmese, a large species of lizard found in Burmah, inhabiting trees and seldom seen, and heard only at dark and during the night; it is of a dark ash colour spotted with red, but the old ones are much darker in colour, as are also the spots.

Their cry first begins with a croak and then they sing out tuckatoo, tuckatoo, quite slow and then in a quicker time; the same word is repeated for a few seconds and then another croak and all is still. Their voice is quite loud and hoarse and heard at a great distance.

The Burmese as well as other natives dread this reptile, as their bite is poisonous and their hold so tenacious that they can only be cut off the body of the person they fall on. The Burmese say that when any one is bitten their body swells to a great size and they seldom live over a day.

The largest ones are half a yard long and only found in dense jungle, on large trees, where there is a great difficulty in getting at them, as they so nearly resemble the bark of the tree, besides the dread of their falling on one."

This Tuckatoo specimen before me now is of stout form of body and tail, coarsely granular and of a dark grey colour, clouded with grayish white markings, belly of a uniform grey, measuring 10 inches in length from tip to tip and 6 inches across arms and chest from finger ends to finger ends,

length of skull 2 inches, arms 2 inches, legs 2 inches, and that of tail 4⅛ inches.

This Gecko according to *Mason* was first described by the Catholic Missionaries in Siam during the reign of Louis XIV and has no doubt been described and depicted by others since, so that I need not enter into details.

2. The *Bish Kopra,* corrupted into Bis cobra is common to Scinde, Guzerat, Chittagong and other places. The word *Bish* implying poison, and *Kopra,* snake, or the poison snake. In *Hind.* it is *Ghoor,* in some parts of Upper India, in Bengal *Tuckhut* and *Tuckoo* from its song or cry, but in Bareitch, Oude and Scinde they are termed Bish Kopra.* The scientific name of Bish Kopra is *Eublepharis Hardwickii, Gray.* It is described by Dr. Gunther in his catalogue of reptiles. "The fingers and toes are not dilated or depressed, rather short, all clawed and with a single series of simple transverse, narrow scales below. The upper eyelid broad, prominent, the lower well developed. Tail cylindrical, tapering." Of the two specimens now before me and for which I am indebted to the kindness of Captain Lampen of the 17th Regiment N. I. one measures 9½ and the other 5½ inches in length. *Gunther* says, "it is a single species of this genus, differs from Gecko, evidently a ground lizard."

Some years ago, I saw some articles in the Madras papers about this reptile which made it out to be the most poisonous creature with or without four legs, and one or two of the officers who were in service in Bengal mention that several sentries were found dead on their posts from the bite of some creature, which was afterwards found, and which I took to be the Bis Cobra from the description they gave of it.

That neither the Bish Kopra nor the Tuckatoo is poisonous, but on the contrary a harmless reptile, there is not the slightest doubt. But how or why it is so popularly reported to be not only poisonous but deadly it is impossible to conceive. There is not as far as I am aware any authenticated account of cases bitten by either of these lizards. The common Gecko *Hemidactylus Coctæi* even in Southern India is dreaded, more especially the larger kinds found about rocks and large trees, and by their cry the natives pretend to foretell coming events; the fall of the house Gecko before or on an individual accidentally is considered

* Balfour's Cyclopœdia.

a misfortune ; and to the urine of the house lizards is attributed a restricted form of *Herpes zoster* that sometimes shows itself about the face of individuals, more especially about the lips and mouth. A learned work in Tamil termed the "*Sittar Vedum*" or work of the "seven sages," pretends to give an account of all poisonous animals ; snakes, centipedes, spiders, beetles, lizards, dogs, cats, tigers and monkeys being placed in the same category of venomous animals.

This book is to be readily had in the bazaars for two or three annas and I believe a similar work exists in Ceylon among the Cingalese. The popularity of this work I fear, at least in this part of India, gives rise to such stupid and false notions of animals. It is firmly believed by the natives of Southern India that the Iguana, *Monitor dracœna*, Linn., bites severely and will not cease its hold till a donkey brays ! That the natives believe that most lizards and some species of toads are poisonous there is no doubt. Some years ago, when Zillah Surgeon of Chingleput, I remember on one occasion a native came running to my house, he was almost breathless, streaming with cold perspiration, looking pale, skin cold, pulse small, holding the thumb of his left hand in his right and complaining of being bitten by a Chameleon, *Chameleo vulgaris* on the tip of the left thumb, and requesting with the tears in his eyes that I would do something to save his life, nothing that I could say convinced him that the Chameleon was harmless and the bite not poisonous, but to satisfy the poor fellow I applied some Liquor Ammoniæ to the part said to be bitten and where there was a slight abrasion of the skin and gave him a little brandy and water to drink. He sat down for a while in my verandah and then went away apparently quite well, that the man was in a great *fright* about his life there was no doubt from the state of his pulse, skin and general appearance when he presented himself before me.

Art. IX.—*Lying-in Hospital Reports.*

Two Cases of Elephantoid Tumors of the Labia under the care of Surgeon R. W. Cockerill, reported by John Lancaster, Clinical Clerk, Lying-in Hospital, Madras.

I. *2nd April* 1872.—Ruthnum, aged 19 years. An emaciated dancing girl was admitted into the Hospital this

morning with a large tumor growing from the mons veneris, clitoris and upper part of both labia; the tumor is irregularly globular with flattened sides, the skin covering it is extremely hypertrophied and coarsely nodulated in every direction; it is ulcerated posteriorly from constant irritation and covered with an extremely fetid, thick discharge. A long deep fissure may be seen at the lower and inner part of the tumor in which the vagina and meatus urinarius can be felt; the vagina is twisted towards the right side at almost a right angle, and its walls are extremely thick and cartilaginous; the urethra is pulled downwards and it is with great difficulty that a catheter can be passed into it.

Dimensions of the tumor. From mons veneris to the most dependent part ... ... 12 inches.
Circumference at the widest part... 21½ „
Diameter ... ... 13 „
Around the neck ... ... 10½ „

History.—She noticed the swelling in the right labium 3 years ago; within the last 2 years it spread and rapidly increased to its present size; rendering her perfectly useless as a "dancing girl."

About 4 years ago she was delivered of a still child.

Her general health is evidently greatly impaired; she menstruates irregularly; she is willing to have the tumor removed, but the operation will not take place till her health is in some degree improved; she is put upon a liberal diet with stimulants and tonics.

9*th*—As her health is somewhat improved the operation is to be performed to-morrow morning.

10*th*. *Operation.*—The patient having been put under the influence of chloroform was placed in the lithotomy position, and the tumor supported by an assistant: the diseased structure near the orifice of the vagina was carefully dissected out; an incision marking out the rest of the diseased mass was then made, and the whole of it detached by a circular sweep with a large scalpel; the hæmorrhage was rather considerable: five ligatures were applied to large vessels and several smaller ones were twisted.

The large wound was brought together by strips of plaster and dressed with lint soaked in carbolized oil. The tumor weighed 14 lbs.

23*rd May*.—The girl's recovery was tolerably rapid: the wound healed completely in 6 weeks, leaving a short broad cicatrix; the orifice of the vagina is slightly contracted and the mons veneris and right labium somewhat puckered up: the structures around are all apparently healthy.

II. Arloye, aged 27 years.—A well-built woman in fair condition was admitted into the Hospital with an enormous tumor growing from the mons veneris and left labium and hanging low down between her knees. It is firm and leathery; pyriform but somewhat flattened antero-posteriorly; the skin covering it is excessively hypertrophied, firmly adherent to the tissue beneath and irreguarly and coarsely nodulated: posteriorly, from constant chafing, there is a broad abraded surface covered with a thin and horribly offensive discharge. The vagina and urethra are in their normal position and healthy.

Measurement of the tumor.

From mons veneris to the most dependent part.

	$16\frac{1}{2}$ inches
Circumference at the widest part ...	$38\frac{1}{2}$ „
Diameter	$15\frac{1}{2}$ „
Around the neck	14 „

History.—The swelling was first noticed in the left labium 7 years ago; it increased slowly in the first 5 and rapidly in the last 2 years. While the tumor was still small she became twice pregnant and was safely delivered of living children; her general health is not impaired to any great extent; she menstruates regularly: as she is anxious to have the tumor removed, the operation will be performed as early as possible.

2*nd May* 1872. *Operation*.—The patient having been put under chloroform was placed in the lithotomy position, the shoulders well raised and the tumor supported by an assistant: As the diseased tissues did not involve the clitoris or ostium vaginæ as in case I. no careful dissection was necessary. A preliminary incision however was made around the neck of the tumor enclosing as far as possible all the diseased structure and then at this site the enormous mass was rapidly cut away with a large scalpel; the hæmorrhage was less than is usual in the removal of tumors of this kind.

Four ligatures were applied, the smaller vessels were twisted. The tumour weighed 22¼ lbs. The wound was dressed with lint and carbolized oil and a catheter kept in the bladder.

The woman made an uninterrupted and tolerably rapid recovery; the wound granulated healthily and healed in about 7 weeks, leaving a long narrow cicatrix, but with no marked contraction of the adjoining parts which are healthy with the exception of the right labium which is slightly hypertrophied.

On section.—The tumors were identical in structure with the scrotal tumors so common in this country.

Both the patients left the hospital in good health and highly delighted with their improved and to them novel condition.

ART. X.—*Report of the Medical Committee appointed to investigate the causes of the Epidemic Fever, which has prevailed in the Provinces of Coimbatore, Dindigul, Madura and Tinnevelly, during the years* 1809, 1810, *and* 1811.

(*Continued from page* 17.)

TOWARDS the southern and eastern extremity of the Peninsula there are many salt marshes (or Purgas). The chief of these are situated betwixt Coalsairpatnam in the Punjmahal Talook and Veseapetty in Caulead, and are as follows:—Moodoomutta which lies about 12½ miles south-west of Manapar; Anacoodyerpoo, about 10 miles south-west of Manapar; Pootoor, about 7½ miles south-west of same place; Cunnoo, 6 miles south-west of Vyravum, about the same distance; Soondencota, nearly 4 miles west of Manapar; and Cootam which is situated a short way from Moodoomutta. These marshes were formerly all distinct from each other but, owing to the late inundations, four of them are now joined together, viz., Pootoor, Cunnoo, Vyravum, and Soondencota, which form one great marsh 10 miles in circumference. They are separated from the sea by high sand hills, have no *natural* communications with it; and lie at unequal distances from it, of from 4 to 13 miles. In common years there is not much water collected in them; but since the heavy monsoon of 1810, and

more especially since the rains which fell out of all season in February and March, they have been filled to a considerable depth (5·7 or 10 feet) and the water, by remaining long in a state of stagnation, has been productive of infinite mischief. In December 1810 the inhabitants of the different villages which are contiguous to these briny swamps, (10 or 12 in number), complained that their houses were rendered uninhabitable, that most of their cultivated lands were flooded and that the water had risen so high on their palmyra trees that they were prevented from drawing toddy. To remedy these evils Mr. Hepburn gave orders that a cut should be made from the four united marshes to the Curnyar river, which rises in the Calcaud hills, with a view of diverting the superfluous water from the deluged country. The cut was made and for a time answered the purpose intended ; but the subsequent rains in February and March, unfortunately, by occasioning fresh floods and a new pressure, choked up the opening ; since that period and from the time of the weather becoming drier, every exertion has been made to drain the country and relieve the suffering inhabitants.

Towards the extremity of the Peninsula there is another pass into the Travancore country, known by the name of the Arumboolie pass, which till lately was the only one frequented by Europeans ; it is about 2 miles in width and not more in length through the hills, which here become very narrow. The eastern opening of this pass lies exactly in the meridian of Cape Comorin and at the distance of 12 miles from it.

There are many large, flourishing, well built towns in the Tinnevelly Province, the chief of which are situated on the fertile banks of the Tambarapoornie ; such as Tinnevelly, Alvartinnevelly, Shermadavy and Culdacourchy.

Tinnevelly is an extensive, handsome and populous city, situated in latitude 8°43″ N. and about 25 miles east of the great mountains. It is in the Nelumbalum Talook, about 3 miles west of Palamcottah, and is the capital of the Province ; it is surrounded on three sides by extensive paddy lands, watered from the river, and on the west by dry rocky high ground.

Such then as we have described them, or nearly so, are the geographical boundaries and strongest features of the

different Provinces to which our attention has been on this occasion directed; we shall now proceed to say something of their climate in common years.

Coimbatore,* as might naturally be expected from its elevation, is colder and drier than some of the neighbouring countries; we have already remarked that the general plain of it is about 900 feet above the level of the sea; so that if the theory that has been assumed by Dr. Black† be just, that for every 200 feet of elevation we may reckon one degree of reduced temperature, this district ought to have a great advantage in this respect over all those situations that lie nearer the ocean.

The north-east monsoon commonly commences soon after the calms are over, which take place about the period that the sun crosses‡ the Equator and enters on his southern declination, in other words towards the middle of October; and first pours its torrents over the Coromandel Coast, in the vicinity of Madras, about the beginning of § November. This monsoon is evidently formed by the junction of the perennial east wind and the cold air from the frozen mountains of Thibet rushing towards the south-west, to supply the place of that which has been rarified and sent upwards by the influence of the sun on the east coast of Africa and the Indian Ocean.

The rainy influence of the north-east monsoon, which almost invariably attends the change of the wind to the north, seems, as far as regards the most southern parts of the Peninsula, to be in great measure confined to the Districts lying east of the Balaghaut mountains, which from their great height and depth attract and arrest many of those clouds which might otherwise have been carried to the Malabar side of India by the strong north-east wind. In such countries as are situated towards the north, as far as Cuttack, this monsoon would appear to be in like manner bounded, in some degree, by the great range of high lands which run south in the Peninsula and at the unequal dis-

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* It is to be kept in rememberance that by the District of Coimbatore is now meant the Divisions of Caroor, Coimbatore, Darampooram and Sattimungalum.

† See Dr. Black's Lectures on Chemistry. Chapter on unequal Temperature. Vol. I., page 103.

‡ The sun crosses the line about the 22nd of September.

§ The rainy influence of this monsoon is observed gradually to extend from the north towards the south. It seldom reaches Tinnevelly before the end of November.

tances of 25·28 or 50 miles from the sea. In fact the rainy influence of the north-east monsoon may be said nearly to be confined to such territories as belong to the Madras Establishment.

In Coimbatore the rains at this season (the north-east monsoon) swell the rivers Noel, Bhavanie and Amberabady, as also the Cavary (which, we have already observed, is likewise filled by the south-west monsoon) and at this period also the tanks and low grounds of the District receive their grand annual supply of water.

The end of December, when north-east monsoon rains are over and the sun has gained his most southern declination, may be considered as the coldest season of the year in all those countries situated north of the Equator. In Coimbatore at this period the range of the thermometer in the shade is from 62° to 80° or 81°; the climate is then delightful and the north-east wind proves enlivening and bracing to weakly constitutions. Towards the end of January and in February the dews fall heavily; and the fogs in the morning, especially in situations near the mountains, continue sometimes till 9 o'clock in the forenoon; occasioning simple intermittent fevers, and catarrhs amongst the Native inhabitants.

The north-east wind prevails with little variation till the beginning of March; though it generally becomes weaker the farther the season advances: after this period, as the sun approaches the Vernal* equinox, the winds are somewhat variable and occasional calms ensue, till he has gained about the seventh† degree of northern declination; when what is called the south-west monsoon may be said to commence; and which appears to be occasioned, according to the notions of the Chevalier‡ *De Coudraye* and others, by the cold air from the continent of Africa and the Indian ocean, (which at this time have felt the absence of the sun) taking its course towards those extensive tracts, lying in the north-east of Asia, over which the air has become heated and displaced by the powerful influence of the solar rays. The early part of the south-west monsoon season is a period of great drought on the Coromandel Coast, though partial rains are

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* The sun crosses the line about the 21st of March on his northern declination.

† Which he does about the 7th of April.

‡ See his "Theory of the Winds."

experienced then in Malabar and amongst the Western Ghauts.

It must here be observed that by the terms south-west and north-east monsoon are not so much to be understood the rains which come from these points as the particular winds which propel these rains; for we know that the north-east monsoon, properly so called, continues long after its torrents have ceased to fall, and that the south-west wind often ensues before the rains commence from the same quarter.

Fromthetime that the sunpasses the 7th degree in his northern declination, the southerly and south-east winds begin to blow on the Coromandel Coast; and continue till about the middle of May. In Coimbatore and other inland situations they are weaker and less unpleasant than at places closer to the sea; where, particularly near the period of their cessation, they are often hot* and to some constitutions extremely enervating. In the month of March† in Coimbatore rain is very uncommon; the wind, though in the morning it still has a gentle flux from the north-east, comes usually round to the south-east in the evening and, towards the end of the month, the north-east wind for the most part dies away altogether; and with it, in regular seasons, those dews in a great measure disappear which had fallen heavily during the three preceding months.

The sky in Coimbatore in the month of April is frequently overcast but rain is not very common, at least not to a greater extent than a few showers from the south and south-west. The weather gets daily hotter, the average range of the thermometer for the month being from 76° to 93°; the wind continues to blow from the same direction as in the end of March but oppressive lulls are often experienced and the dews are but trifling. In May the thermometer rises sometimes as high as 96° and 97° in the shade and seldom falls lower than 79°. The sky is often overcast and there are occasional disagreeable whirlwinds, quickly followed by pelting showers, accompanied with thunder and lightning.

The southerly, or what is called the long-shore wind,

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* We must here except however all situations south of Tanetary or indeed Point Calamyre, where, by the training of the coast towards the west, the southerly wind is rendered less drying and unpleasant than it is further north.

† By a correct Register of the weather kept at Madras, it appears that no rain fell there, during a period of 13 years, in March.

generally terminates about the middle of May; when, owing to this part of the Peninsula having been so powerfully heated by the vertical* rays of the sun, a change takes place in the direction of the wind, which becomes general nearly all over India; and which brings on, before the rains begin to fall in June, by far the hottest season of the year.

We have observed that the sun crosses the equator about the 21st of March in his northern declination and that, soon after, the wind begins to blow from the south; so that by the end of May he has been vertical over all those districts lying betwixt the southern extremity of the Peninsula and Coimbatore, which have, of course, been much heated. The consequence of this is, that the vast body of air, which takes its direction from the now comparatively cooler regions on the eastern and southern Coast of Africa, rushes towards the tracts where the greatest rarification has taken place; and which, as we have seen, must at this time be the arid plains of the Carnatic. But this wind, passing over a great extent of heated country, will naturally partake of its temperature, and in this way is produced the hot west wind, which usually continues to blow pretty regularly till towards the end of August; when frequent calms ensue and light breezes from different quarters, the evident consequences of the sun's crossing the Equator.

Soon after the setting in of the hot westerly winds on the Coast of Coromandel, the rainy influence of the south-west monsoon is first experienced on the other side of the Peninsula, pouring its floods over Malabar and the Mysore Country and amongst the immense Balaghaut and western mountains; but it is partially felt in the provinces lying east of these high lands. In situations near the hills indeed there are at this time frequent heavy showers, especially in the more western and southern parts of the Tinnevelly† and Madura Districts; but, excepting the Valley of Courtalum, no place that we know on the east side of the mountains can be said to be under the regular influence of the south-west monsoon; and even here in certain seasons the expectations of the cultivators are in this respect greatly disappointed.

After the torrents which distinguish this monsoon have

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* The sun is vertical over Coimbatore about the 10th April.

† What is called the first burst of the south-west monsoon often occasions heavy rains in Tinnevelly.

begun to fall in Malabar, the temperature of the west winds on the Coromandel coast is usually a little moderated but, in the Carnatic, by no means to that degree that we might expect. There, heat may be pretty nearly calculated by the distance from the great western Ghauts, as, the nearer to the eastern sea we go, the west wind is invariably found to be hotter and at the same time weaker. In such situations great relief from the extreme heat is almost daily derived from the sea breeze; but we have known 20 successive days at Madras during the land-wind season without an easterly wind, and which produced a state of the atmosphere which was indeed almost insupportable.

After what we have said it can easily be supposed that the west wind in Coimbatore, in the months of May, June, July and August, is by no means so distressingly hot as in situations lying further east; but it is (at least in some parts) fully as unpleasant from another cause, its immoderate strength. In speaking of the general appearance of this District we mentioned the Paulcaudcherry pass into the Travancore country, which is in a direct line with Darampooram and Trichinopoly. This opening is of considerable width and, being shaped like a funnel with its narrowest end towards the east, allows and attracts a free and full passage to the west wind from the time that it begins to prevail. For the first fortnight this is comparatively weak and a little warm; but from the commencement of June till near the end of August, when the rains are falling on the Malabar Coast, it becomes cooler, particularly near the hills, and sweeps over the tracts and in the line we have above mentioned with great violence; so much so indeed at Darampooram as to prove extremely unpleasant to Europeans; who are, during the time it lasts, in a great measure prevented from taking exercise in the open air.

In other parts of this District, out of the strong current of wind, the climate at this time is much more pleasant, such as Coimbatore and Bhavanie, the first of which stands clear of the funnel's mouth, the other is a great way to the eastward and northward of it.

Were the great western mountains as near to the ocean in this Province as they are in that of Tinnevelly, we have no doubt but that the rainy influence of the southwest monsoon would prove considerable at the opening of the Paulcaudcherry pass into the Coimbatore country, but, as it is, there are only here experienced frequent

scudding showers which, however, have the effect of making the climate perfectly cool and agreeable.

The west wind, so refreshing near the opening of the pass, by the time that it reaches the eastern boundary of the Coimbatore country, is somewhat warm; and at Trichinopoly, where it blows with great force, it would be almost as hot as Madras were it not for the extensive flooded paddy lands lying towards the west of it, and the swollen river Cavery, over both of which it passes.

A good deal of rain usually falls in the eastern part of Coimbatore in the month of June but in the more western tracts, near the hills, the quantity at that time is much more considerable. There are hardly any dews. The sky is often overcast and the temperature of the air towards the end of the month is somewhat lower than in the preceding one. The nights are pleasant; and the Cavery for the most part fills about the 12th or 13th from the south-west monsoon torrents in the upper countries. In July nearly the same kind of weather prevails as in June, only that in the first mentioned month there is a little less rain than in June. The range of the thermometer is commonly betwixt 75° and 91°.

About the middle of August in this province the west wind becomes much more moderate and there are frequent heavy showers and occasional thunder-storms: soon after this, most oppressive lulls are experienced, and the evenings and nights become hot and close towards the end of the month, the river almost invariably again fills and gentle airs now and then blow from the southward.

In September the wind is variable but the westerly still predominates. That sultry and close weather, which constantly takes place as the sun draws near to the equator, is now felt. The evenings are most unpleasant and the insects very troublesome; there are occasional showers from different quarters.

The weather in October in Coimbatore is for the most part very similar to that of the month preceding and, though rain occasionally falls, the air is often close and sultry; the winds are light and variable and the insects extremely annoying.

It has already been observed that about the middle of this month the north-east monsoon commences and that at the same time its rainy influence is first felt in the northern tracts of the Coromandel coast; but

the rains do not usually reach Coimbatore sooner than towards the 6th or 8th of November and are generally over by the end of December, about which time the delightful cool weather begins, with heavy dews.

We have said before that this Province was from its nature well suited for dry grain cultivation ; the proportion of which over that of rice is so great as to be as 97 to 3. The different grains here produced are the following :—Rice (Oriza), Cumboo (Holcus spicatus), Cholum (Holcus sorghum), Natchenny (Cynosurus coracanus), Warroogoo (Paspalum frumentaceum), Tennay (Panicum italicum), Samay (Panicum miliaceum), Wheat (Triticum), Ulandoo (Phaseolus radiatus), Carp Ulandoo (Phaseolus max.), Cooloo (Glycine tomentosa), Towaray (Cytisus cajan), Caramuny pyre (Dolichos catiang), Putchapyre (Phaseolus radiatus), Samy pyre (Phaseolus radiatus var.), Tattapyre (Dolichos lablab), Cadalay (Cicer arietinum), Mutchacottay (Dolichos lablab var.), and Coodraywalie samay (Panicum semiverticellatum (Spec. nov : Rother).

There appears to be great general comfort enjoyed by the Native inhabitants of this District ; which was witnessed by us in our visit to it during the months of May and June last. The houses are for the most part well raised and, their roofs being made to slope much, they are little liable to suffer from heavy rains.

We found, as was noticed in our Letter to the Medical Board of date the 17th of May 1811, that the cultivators commonly fed* well, that most of them slept on cottles (trucklebeds) and had cumblies† to cover them ; habits which seem to have existed from the time that the Coimbatore territory was under the dominion of Tippoo, who was extremely particular regarding such matters, owing to the bleak air and dampness of the greater part of the coun-

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* As might be supposed from the nature of the cultivation of this Province, the most common food for the labouring people is the dry grains and pulses ; the last are much used and are known to be of a most nutritious quality. The affluent of course eat more rice and ghee ; and, as in other parts of the world, enjoy those comforts and luxuries in respect to diet which the poorer inhabitants cannot afford ; who are sometimes on this account led to prepare for themselves crude and unsalutary mixtures with some of the worst kind of greens, fruits or butter-milk.

† Coarse blankets. The sheep of Coimbatore, unlike those of other parts of lower India, have a kind of wool upon them from which these cumblies are made.

tries over which he reigned having frequently proved prejudicial to his people.

Upon the whole Coimbatore may well be called healthy, though there is no doubt (as there must be in all such provinces as are in any degree bounded by immense mountains) a degree of danger attendant on going amongst the Hills, at certain periods of the year, where fever is known to be constantly endemic.*

The climate of the Dindigul District in common seasons is reckoned one of the finest in India, so much so indeed, as to have become proverbial.

The temperature during the months of December and January is not in general quite so low as it is in the more northern parts of Coimbatore, the thermometer seldom falling below 64° in the shade. In February the dews are heavy and the morning fogs extremely dense. The southerly and south-east wind, which blows towards the end of March and in April, is here by no means so unpleasant as it is nearer to the coast and is sometimes pretty strong. About the middle of the last mentioned month, by which time the dews are nearly over and the sun vertical† over Dindigul, oppressive lulls‡ are occasionally felt.

It seldom rains in March and April. May may be considered as the hottest month of the year, though the thermometer does not usually rise so high here as in the Coimbatore and Madura Districts and the air is now and then refreshed with showers attended with thunder, by which means the land-winds when they begin to blow are rendered much less scorching than at many other places. But it is in June, July and August, that the superiority of the climate of Dindigul in regular seasons is chiefly experienced, owing to the number of hills which are scattered over and distinguish this province. Much rain falls during these months, the natural consequence of clouds they attract and the frequent and rapid interchange of the electric

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* Such as it is amongst the mountains near Sattimungalum in March and April.

† The sun is vertical at Dindigul about the 17th of April.

‡ These lulls are peculiarly distressing at this season in what is called the Dindigul valley, which from its situation, has a climate much resembling that of the Vallois in Switzerland bounded on one side by the Alps of Savoy and on the other by the most mountainous tracts of the Canton of Berne.

fluid. In this way the sky is often overcast and the temperature of the air rendered cool and pleasant: during the remainder of the year the climate of Dindigul does not materially differ from that of Coimbatore.

Several of the pulses which we have mentioned as growing in Coimbatore we could not find in the Dindigul country, which leads us to think that they are not common; neither did the Wullawahs (labourers) in this District, who are chiefly Pullars, seem to us to be so comfortable in some respects, chiefly in regard to lodging. Their houses, unless in a few of the largest towns such as Vadasundoor and Pariocolum, are frequently small, badly built, carelessly thatched and but little raised from the level of the ground; especially those of the villages near the hills, in which there is often an appearance of misery and squalid poverty to be met with, in a great measure perhaps owing to their unhealthiness and the unprofitable nature of their situations. Cottles are less used here than in Coimbatore, indeed they are seldom seen unless in the houses of those in rank above the labourers. such as the Marassidars and principal inhabitants, although timber is by no means scarce.

Cumblies however are here almost in general use; we believe they are manufactured in some of the more Eastern estates and are certainly a great source of comfort in a hilly country where the dews fall heavily and fogs last long.

The number of cawnies cultivated with punjah or dry grain of all kinds, in the province we now speak of, is Cawnies 123,259, Acres $5\frac{3}{4}$; those under Nunjah or Paddy cultivation amount to Cawnies 28,003, Acres $14\frac{1}{2}$; which gives a difference, in favor of the Punjah, of Cawnies 95,195, Acres $7\frac{1}{4}$. The particular food of the inhabitants will of course depend much on the situation of the village, whether under a dry or a wet grain culture; a part of the produce of which they receive as the price of their labour together with a small sum of money for clothing.

The climate of the Madura Province differs in some respects from that of Dindigul. The country is lower in the Peninsula, is a little farther south and is not so mountainous; the natural consequence is, that it is hotter in the hot season and not quite so cold in the months of December and January. In April and May the extreme degrees of of temperature betwixt the morning and noon are 79° and 98.° In January the thermometer seldom

falls below 66° at sun-rise. Rain is rarely seen in February, but a few showers occasionally descend towards the end of March, with whirlwinds, clouds of dust and thunder-storms; about which time the north-east wind becomes very faint and there are gentle airs from south and west. In April the same kind of weather prevails that we have mentioned in Coimbatore, with this exception that showers are here a little more common and come from the west* and south-west.

The south and south-east winds now and then lull† and the most oppressive calms ensue, with frequently a smart thunder-storm in the evening, accompanied with rain from the north-west. This is by far the most unpleasant time of the year in the Province, especially within the Fort of Madura,‡ which lies extremely low, is crowded with houses and choked up with trees. Towards the end of March the inhabitants of Madura are in the habit of visiting the sea-coast at Mootapetty in the Ramnad Zemindary, which from its peculiar situation proves at this season of the year a cool residence.§ By its having the ocean towards the south and west the southerly wind is rendered a sea breeze; and by having the bay of Kilkerry due west of it, the west or land-wind must also become a sea breeze. The sea-port of Daviapatam which is nearly opposite to Mootapetty on the other side of the peninsular neck of land becomes from its position a more desirable retreat during the north-east monsoon.

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* About the full moon of the month of April the river Vyáar, whose bed had previously been dry, is invariably partially filled by rains which have fallen amongst the western mountains from the period that the south-west monsoon winds had begun to blow; and on this circumstance the Natives calculated with certainty for the replenishing of their tanks and enabling them to perform their various ablutions at the festival of the Aligherry god, which is annually held on the banks of the river at this season of the year.

† These oppressive and unhealthy lulls are particularly experienced in that valley in which Towerincourchie stands and which is nearly surrounded with hills covered with trees and jungle and teeming with rank vegetation.

‡ The sun is vertical at Madura about the 16th of April.

§ The second Member of this Committee having been under the necessity of proceeding to Mootapetty from Madura about the end of June, for the recovery of his health, which had suffered much from an attack of the Epidemic Fever caught during his visit through the unhealthy districts, wrote as follows:—

"We have not felt a single hot hour in our tents since our arrival at Moo-"tapetty, where a sea breeze blows night and day. I look upon this as one "of the best points on the coast for any person to come to, either for the "recovery of his health, or the enjoyment of every thing of, or belonging "to, the sea."

In the beginning of May the west wind in the Madura province, though by no means so hot as in the Carnatic, is somewhat warmer than at Dindigul. In June, July and August there are frequent refreshing showers, particularly in the two first-mentioned months, the consequence as well of these clouds which have been attracted by the Aligherry and Nuttum hills and may be considered as the certain offspring of Coromandel exhalations, as of others which may have been driven by strong west winds from the great Western Ghauts and which are as certainly the produce of the south-west monsoon.

September and October differ but little from the same months in other parts of the eastern coast of the Peninsula, being almost invariably close, sultry and unpleasant.

The north-east monsoon extends to the Madura District in common with other parts of the Coromandel side of India, but in the inland parts the rains fall more gently than they do nearer the sea and are not accompanied by such strong winds. About the middle of November the tanks are full and the Vyāar is impassable at Madura for many days.

Every thing considered, the climate of this District in common seasons cannot by any means be called unhealthy, though the Fort itself has certainly been so for several years past, even before* the Epidemic prevailed; a misfortune which we conceive entirely to be attributed to those causes and *localities* pointed out by the 3rd member of this Committee (in his paper addressed to the Medical Board) and which are certainly sufficient to produce endemic fever in any quarter of the world, and in the finest seasons.

In the District of Madura, as in every mountainous country in the torrid zone, there are situations where fever never fails at certain seasons to be endemic; but then at *such places* in common years it is purely so and extends not its mal-influence beyond their particular range. An intelligent native at Madura informed the President of this Committee that to his positive knowledge there were villages close to and amongst the hills lying in the most western parts of the Province, in which in the months of

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* In March 1801 an army at that time under the command of Colonel Agnew, amounting to 5,000 men, were encamped on the glacis of the Fort of Madura, and were remarkably healthy; though the inhabitants within the garrison were then dying at the rate of 15 and 20 daily.

March and April no man could pass a single night without suffering soon after from an attack of fever.

The relative condition of the Native inhabitants does not appear materially to differ from that of the cultivators of the Dindigul District. Along the banks of the Vyāar and in the Shevagunga Zemindary there is a great deal of Paddy land,* and of course in such tracts rice is generally eaten : in the other quarters the common dry grains are the usual food, especially, Warroogoo, Cumboo, Cholum, Natchenny and Samay. The pulses we found not so much cultivated here as in Coimbatore, indeed several of those we mentioned were not to be seen.

The Marrawas do not seem to be at all conspicuous for neatness or comfort in their dwellings (unless it be in some of the large towns such as Cholavandum and Nuttum). Their houses are but indifferently built, little raised above the ground, and the thatch† is often of a bad kind and carelessly put on. Cumblies, which are a good deal used in Dindigul are in this Province scarcely known ; and cottles amongst the lower orders are rarely met with ; so that a bleak and moist season here exerts its unsalutary influence most severely, especially on the poor, whose meagre and haggard looks are at such times so many testimonies of the mischief that certainly springs from an exposure to cold and damp ; and afford a sad warning of the still more serious evils that would arise under such circumstances from the supervention of an epidemic constitution of the atmosphere.

The climate of the northern part of the Province of Tinnevelly has a great resemblance to that of Madura ; whilst towards the centre, on the fertile banks of the Tambarapournie, and in its more southern tracts it assumes a somewhat different appearance.

The north-east monsoon seldom reaches those quarters before the end of November and is in general by no means so heavy as in the Carnatic. The rains are over about the

* The number of cawnies in the Madura District under Paddy cultivation is cawnies 34,881, acres 11¼ ; the number under that of dry grain is cawnies 102,658, acres 13 ; which gives a difference,in favor of the dry grain culture, of cawnies 67,777, acres 13¾.

† A very bad custom prevails in this as well as in the Dindigul District, which is that of putting new thatch *over* what is old and rotten ; by which means, particularly in wet seasons, an unwholesome damp is retained in the dwelling, the bad consequences of which may easily be conceived.

latter end of December but are not succeeded by so cold a state of the atmosphere as is experienced in the Coimbatore and Dindigul territories. The thermometer seldom falling below 69° or 70° at sun-rise.

The Tinnevelly country is peculiar in this respect, that a fall of rain is always looked for late in January in quantity sufficient to bring down the rivers and replenish the tanks.* Towards the end of February the weather begins to get warm, and in March may be reckoned close and sultry, with a great deal of clear sunshine; rain is seldom known to fall in these months and in the latter the thermometer occasionally rises as high as 93° or 94°. About the beginning of April (which is also a hot month) the southerly wind commences and continues till late in May, during which period rain is not very common though there is now and then a smart shower attended with thunder. About the end of May or early in June, the south wind ceases and the first burst of the south-west monsoon usually breaks with violence, pouring its torrents amongst and over the great Ghauts, bringing down the rivers and deluging the low country. June is, in conseqence of these rains, a cool, cloudy month; in July, August and September, the west wind blows with great force and there are occasional showers from the same quarter; this wind is hot when there are many days together without rain but by no means to so great a degree as in situations lying farther north in the Peninsula; where the land, from sea to sea, is much wider and where of course the west wind must naturally be more heated.

October is almost invariably sultry; it is true, showers now and then fall but they have not the effect of cooling the atmosphere and, towards the end of the month, there are occasional light airs from the north-east, though the rainy influence of the north-east monsoon is seldom felt till towards the end of the succeeding month.

The cool retreats of this Province are Courtallum and Trichindore. Early in June, after the heavy Malabar rains have commenced, is the proper time to visit the former; the climate is then truly delightful to the feelings of Europeans and continues so in a great degree till the middle of October.

Owing to the depth† of the Courtallum valley as already

* The tanks in Tinnevelly are for the most part small.

† See the geographical description of this recess in a former part of this paper,

described, it approaches so much nearer to the Malabar coast than other situations along the course of the hills that those clouds which under other circumstances would have expended their waters amongst the immense mountains here pour down a great part of their rain ; extending, in a considerable degree, to this recess the climate of Malabar ; with the favorable exception that it is not at this time by any means so damp*, notwithstanding the very luxuriant vegetation which is seen in every direction and the showers that fall daily attended with a strong bleak west wind.

The difference of the thermometer betwixt Courtallum and Palamcottah is in general about 10°, while in June or July the temperature at the former is 75° at seven A.M. and 79° at two P.M. It is at Palamcottah at the same hours 85° and 89°, so that during the hot weather at the latter mentioned station the feeling of comfort experienced on quitting it and visiting this charming retreat is wonderful. Such is the bracing effect of the cool air here that exercise can be taken without doors at any time of the day, and amusements pursued with as much pleasure as in England, as the sky is almost constantly overcast ; and if a person does by chance get wet in a shower there is no danger of a cold being caught in consequence, so great is the dryness of the atmosphere.

What conduces much to the restoration of the invalid at this singular abode is the little waterfall, under which most of the European inhabitants daily bathe ; this cataract is, by a division in the rock above, separated from the greater one, and is not more than 13 or 14 feet high. The pressure of the water, after the first shock† is over, gives an indescribable feeling of pleasure ; by its constant beating it quickens the circulation and produces a fine glow all over the body ; and has besides the further good effects of dispelling languor, raising the spirits, exciting appetite and promoting digestion in a superior degree to any other species of bathing that we are acquainted with. It has, in consequence of these virtues, together with the fine cool climate of the valley itself, been

* It is a curious and singular fact that in this valley though rains are falling daily there is no feeling of dampness of any kind within doors, as there is in the Carnatic during the north-east monsoon; and iron and steel remain without rusting for a very long period.

† The average temperature of the water of the fall at 8 A. M., during the bathing season is from 72° to 75°.

the happy means of rapidly restoring many to health and comfort, who previous to their visit to Courtallum appeared to be hastening to their graves.

But it will be necessary here to remark, before taking leave of this recess, that however delightful may be its climate in the months of June, July, August and September, it is far otherwise during those of February, March, April and May. Partaking as it does of both monsoons, there is much luxuriant vegetation in it; but from its singular topographical position, it is altogether, or in a great measure, deprived of the salutary influence of the southerly winds, which alone could purify the air, distempered as it must be by much moisture and unventilated jungle; the consequence of which is that at the last mentioned period it is close, hot and sultry to the greatest degree and never fails on that account to be most unhealthy; indeed endemic fever at such times is as certainly met with here as at Gambia and Senegal.

This peculiarity in the climate of the Valley of Courtalum we particularly beg leave to impress upon the readers of this paper, as it bears an exact resemblance to that which sent its mal-influence over the southern provinces of the Peninsula in the end of 1810 and first five months of 1811; when unusual rains occasioned inordinate moisture and the deficiency of the southerly wind produced stagnation and morbific miasma.

Trichindore is a situation on the sea-side, about 30 miles east of Palamcottah. It is resorted to in the months of March and April for the benefit of the sea-breeze and change of air, but is inferior to Mootapetty in many respects, which may easily be discovered ou referring to the singular advantages of that place already noticed.

The District of Tinnevelly has certainly many things to recommend it with regard to climate: the north-east monsoon is here mild; in March, April and May (the only unpleasant months of the year) the sea is near to resort to, and for the sick and infirm who may not find Palamcottah suited to their feelings or constitutions in June, July, and August, there is Courtalum at no great distance to fly to for relief.

The Natives in this Province seem in general to enjoy greater comforts than in some others that we have mentioned; their dwellings are for the most part well raised and built, particularly in such towns as lie along the fertile

banks of the Tambarapournie river, where tiled houses are common and where the streets are wide, regular and clean.

In the northern and western tracts of the Streevulputtore Talook however, especially in those estates nearest to the hills, hamlets of a very inferior order, both as to the building and thatching, are often met with. Situated in low and moist bottoms they cannot be otherwise than damp and unhealthy and the houses in such places, being neither built in regular streets nor joined together (so that each might partake of the drying influence of his neighbour's fire) they, like others similarly circumstanced in the Madura Province, are but too often the abode of a gaunt and meagre race.

Cumblies are little known in this part of India, and Cottles are only used by the more affluent. From the rice* cultivation being so much greater than that of the dry grain in Tinnevelly, it follows that the inhabitants eat more of the former than in some other districts, in the rich and beautiful villages situated in many parts of this country. A great variety of valuable fruits, roots and greens is produced, though there are a few of the pulses† common in the Carnatic that do not appear to be much known.

(*To be continued.*)

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* The revenue annually received from Rice or Nunjah cultivation in the Tinnevelly Province is Star-pagodas 285,000. That from dry grain or Punjah cultivation is Star-pagodas 95,000 making a difference, in favor of the Rice culture, of pagodas 190,000.

† Carp Ulandoo, and Malay Towaray, &c.

THE PUBLIC HEALTH.

Having entered upon the second half of the year 1872, we propose, briefly, to review the circumstances which have already influenced public health during the earlier months of the year, and to note the health prospects of the remaining months.

In the first place we must allude to the sudden and mysterious irruption—not of a new disease, but of a new epidemic of the old "break bone" or dengue fever, familiar to our predecessors in India of 20 years ago, but comparatively unknown to the younger members of the profession in India. This disease so far as its epidemic relation to India is concerned, evidently came to us on the present occasion from Eastern Africa, Zanzibar, and Aden, as already recounted in the pages of this journal. It has already had a wide distribution in India. We have accounts of its ravages in Bengal, Burmah, Madras and Bombay Presidencies. In some stations hardly an individual has escaped attack, while in others the disease seems to have been content with an isolated victim here and there.

It is too early as yet to attempt to compile anything like a history of its progress, but we venture to hope that medical officers who may have had opportunities of witnessing the malady will keep careful notes of the more interesting epidemiological phenomena, so that a full and connected account of the epidemic may hereafter be compiled for the benefit of the next generation, for in all probability when it once departs from Indian shores we shall hear no more of it for many years to come.

Every now and again we have seen newspaper statements to the effect that dengue has been a cause of death, but such statements, in regard to adults at least, must be received with grave caution, for in many cases which have been carefully investigated it has been found that death was due to some other obvious cause, and not to dengue. Probably in a few instances young children may have died of the disease, but these cases are by no means clear. While therefore the victims of dengue are to be commiserated for the horrible and agonising pains peculiar to the disease, they may as a rule be made happy in the assurance that the disease is essentially of a non-fatal character. While we write the malady is extensively prevailing amongst all classes of the community of the town of Madras.

Next to dengue in prevalence, and much more important in regard to loss of life, has been the great epidemic of small pox, general in almost every district in South India, during the earlier months of 1872, but now in most places subsiding. These great small pox epidemics do this amount of good; they serve to remind us from time to time of the weak places in our system of preventive medicine, and if we mistake not, the facts of the present small pox epidemic will serve to show that we have been leaning on a very rotten prop indeed, in depending upon the present system of public vaccination for the insurance of life against small pox.

It has long been known to those who have thought of the subject at all, that public vaccination in this part of India has been nothing better than a gigantic sham, as regards the protection of the people. The total of annual vaccine operations "reported," (and most people know what vaccine reports are worth) has never exceeded from one third to one fourth of the total births of the population, and while three fourths of the people are practically

liable year after year to small pox, it must be clear to everybody that the vaccine department has never succeeded in the smallest degree in controlling or limiting the ravages of small pox.

A great deal of nonsense has been written and talked about the danger of making vaccination compulsory in this country. It has been said that in making propositions to this end we are interfering with the religious feelings of the people, and that the feeling against vaccination has some religious scruple or prejudice at its bottom. If this be the case, then we can only remark that a Hindu's conscience is easily smoothed, for a recent experiment in the town of Madras has shown that the offer of one anna, or two annas per head for each subject of vaccination will produce any number of parents and children anxious and willing to submit to the operation, and to receive the trumpery bribe.—Curiously enough, the issue of food, which has been tried over and over again, has never done more than bring together just enough of children to keep up a lymph supply at the Presidency depot, and yet the actual value of grain given away per head has been double or treble the money outlay which has brought hundreds and thousands to the depot, who otherwise would not have attended. It seems to us therefore that this Madras experiment may in future be utilized by the Local Funds Boards in spreading vaccination. They have only to notify that the parents of each child brought for vaccination shall receive one anna, or whatever sum may be thought suitable as payment for their time and trouble, and there will in future be no dearth of subjects for vaccination, and if the Local Funds Boards are prepared to spend a little money in this way, there will no longer be any need to trouble the Legislative Council to pass a Bill making vaccination

a compulsory operation. Probably nine-tenths of the population could be reached by the money argument; the remaining one tenth, consisting of the more intelligent and educated classes, might be expected to understand the benefits of vaccination and appreciate it for its own sake.

It is a point of some interest to note here that the death registration reports for the first quarter of 1872 show a diminished prevalence of fever in almost every district in Southern India. In a late number of this Journal we called attention to the fact that mortality had been increasing rapidly from fever, for two or three years past, in very many parts of the country, and that there had been an apparent movement of the great malarial wave from north to south during these years, but it is evident that the intensity of this fever wave had begun to subside during the early months of the present year. We at the same time called attention to the fact that malaria was still active and powerful about the hill ranges of our Southern districts, and our prognostications in this respect have received a melancholy confirmation in the death, from remittent fever, of the Commissioner of the Neilgherries who apparently contracted the malady, while visiting some of the hill slopes of comparatively low elevation. Other cases of severe malarious fever, contracted recently in the hilly districts of Salem and Coimbatore, have come under our notice.

We have left ourselves but little space to touch upon the most important of all public health themes, the advance of a new cholera epidemic. The observer of current newspaper literature must, during the latter part of 1871, have noticed frequent references to the activity of cholera in Oude, and many parts of lower Bengal, and in subsequent months, could hardly have failed to observe, that the disease was steadily extending over the North-west and towards

the Punjab. This same wave of cholera found its way into the northernmost of our districts, Ganjam, in the month of March last. In this district it found a population bordering upon famine, and suffering from great scarcity of water, but up to that time in apparent good health, and free of all epidemic disease. It began in the north of the district and moved slowly through it to the south, appearing in the adjoining district of Vizagapatam in May, and in the one next to it on the south, Godavery, in July. The loss of life already in Ganjam, and Vizagapatam has been very heavy and will probably be still heavier before the rainy season, one of unusual intensity in that part of the country, is over. While the southward advance along the eastern Coast districts has so far been very clearly indicated, the movement of cholera southward through the Central Provinces and Deccan has been by no means so clearly marked. Fitful and irregular outbreaks we hear of, the advanced guards no doubt of the strong cholera force marching more slowly behind, but up to this time it cannot be said that cholera is very general anywhere in the Central Provinces or Deccan, and until it is so, we shall probably find no epidemic movement will appear in the northern districts of the centre of our own Presidency. Up to the end of July, the mofussil stations of Kamptee and Secunderabad had given no evidence of epidemic cholera, although it is right to mention, that outbreaks have occured on the Hyderabad State Railway, and on the G. I. P. Railway, south of Goolburgha.* The influence of this through railway communication with infected districts will evidently require to be carefully noted, and we must not be surprised at any time to find that the enemy has advanced and taken up a position on our own rail-

* NOTE.—While correcting the proofs of this article cholera is reported to have broken out in the city of Nagpore.

way line south of the Kistna. The main facts we wish to impress upon our readers are that the new cholera invasion has already appeared in force in our northern coast districts, where it is at the present moment steadily moving southward, and that the great body of epidemic cholera, for which our own Presidency and Bombay usually suffer has not made any considerable westward advance during the last few months, but still remains in force in the North-west Provinces and Central India. From all concurrent history we must expect this western and southward advance of cholera, and be prepared for it during the later months of the present year, or the beginning of the next. It will be curious moreover to watch how far the eastern coast cholera will extend south, before it is overtaken by the great advancing wave of Central India and the Deccan. The lines of movement are at present clearly distinct, and the phenomena of the present year may help to settle one or two curious questions regarding the limits of the coast cholera, which yet remain to be defined.

DR. SHORTT'S LECTURES ON SNAKES.

During the latter part of the month of June we enjoyed the privilege of listening to three lectures on Snakes, given by Dr. Shortt, Superintendent General of Vaccination, Madras Presidency, at the Medical College.

The lecturer, after introducing the subject to the students of the College who formed the greater portion of the audience, gave a description of the anatomy of the reptile, taking care especially to point out the peculiarities of the skeletons of the ophidia, and the method of articulation which serves so materially in the varied and rapid movements of this class of reptiles. The second lecture was a con

tinuation of the first. Some points in the latter having been reiterated, the lecturer dwelt more especially upon the arrangements of the hard and soft structures of the head and especially upon the position of the poison-sac in venomous snakes and the characters of the fangs which are employed by the reptile in the act of attacking an animal. The fangs were shewn to the audience both in the living reptile, and in specimens preserved in spirit. In some of the latter the poison apparatus had been very carefully dissected out, and the communication between the poison-sac and fang was beautifully demonstrated by the passage of a very fine bristle from the sac along the fang.

The third lecture treated of the mythology of the Snake, after which the lecturer exposed the roguery and imposition that are very commonly practised upon credulous persons by the native jugglers. Certain castes gain their livelihood by catching snakes alone, while other castes (the jugglers) endeavour to tame the cobra and after having extracted the poison fangs perform the tricks which may be daily witnessed in this country. These different castes of jugglers were in turn introduced to the audience, before whom they exhibited their powers. With this the lecturer terminated his short but interesting course, leaving his hearers to regret its brevity.

The interest of the audience was kept up by the exhibition of snakes of various kinds and sizes and especially by that of a very fine specimen of the *Duboia elegans* or Russell's viper. No experiments with the poison and the application of what is now believed to be its antidote were performed, saving the poisoning of a dog by the bite of a cobra di capello. This was done to demonstrate the virulency of this secretion.

In conclusion we would thank Dr. Shortt for

the interesting lectures given for the benefit of the public, and we hope that at another time a course of lectures more extended than those we have now imperfectly and briefly noticed may be delivered on the subject of the antidote to the poison.

THE EUCALYPTUS GLOBULUS.

A tincture of this drug has been extensively tried in Hungary, the Banat and other parts of Austria where paludal fevers are endemic; and apparently the results have been very satisfactory. Dr. Keller treated 432 cases, of which 310 were cured, and recourse to Quinine was necessary in 122. Of the 310, 202 were cured without relapse by a single dose; in the other cases repetition was required. Quinine had already been exhibited without effect in 118 cases, in 91 of which the Eucalyptus Globulus was successful. Among the cases which had been previously ineffectually treated with quinine a very large number had been complicated with gastric catarrh, anæmia, splenic and hepatic enlargement, &c. The curation of the disease, under the new treatment was considerably shorter than when quinine is employed. The low price at which the drug is procurable is not its least advantage. Dr. Keller imported the leaves from France and prepared the tincture by macerating them for three months in alcohol in closed vessels. The metric system not having *yet* been introduced into Austria, we are unable to state proportions intelligibly: we are only told that 30 lbs. of leaves yielded 25 Austrian *mass* of tincture. Of this two or three spoonsful, taken with coffee before the paroxysms, were generally sufficient, larger doses being necessary in obstinate cases. Small quantities were given, morning and evening for some time, to remove mala-

rious cachexia. On the whole, in spite of Mr. Broughton's *ex cathedrâ* condemnation of the drug it appears to be worthy of at least a trial, in India as well as in Europe. It may be quite true that "Professors Vanquelin and Leiciana" were mistaken when they thought they found something like quinine in the bark of the Eucalyptus globulus—even chemists sometimes make mistakes. We can have little doubt that our Quinologist is quite right where he has "the honor to state that neither quinine, quinidine, cinchonidine, nor cinchonine is contained in the plant in any proportion." And yet it is possible that the "much" which "has lately appeared in the papers and *quasi*-scientific journals concerning the valuable qualities of the *Eucalyptus globulus* as a febrifuge" may actually be worth noticing, even though cinchona alkaloids be absent. The value of the medicine must be decided by therapeutical not by chemical experiment; and as we have the tree at hand let us try it in competition with "amorphous quinine."

THE GOVERNMENT CENTRAL MUSEUM.

While a successor to the late Major Mitchell is as yet unappointed to the Curatorship of the Museum, it is only right that we should direct the attention of Government to the need that exists for the utilization of the Museum as a school of practical teaching in certain branches of natural science.

Most people who have thought of the subject at all (omitting members of the Senate of the Local University who steadily ignore the whole question) are agreed in thinking that the study of one or more branches of natural science is essential to the educated youth of the present day. Here, whenever the question has been mooted, the educational authorities have

lamented their inability to undertake scientific instruction, and the University has never yet been sufficiently alive to its duty to insist upon a standard of knowledge of one or more branches of science, of the young men who seek its degrees. What we wish to point out is that the Central Museum might be made a school of practical instruction in Botany, Zoology, Geology, and Mineralogy, as well as in many practical applications of science to arts and manufactures, if the Government will only carefully consider the importance of the Institution, and place it upon a proper footing by appointing a thoroughly scientific curator, who shall give his whole time and energies to his duties.

The Museum for years past has been a popular lounge for the holiday loving portion of the native community. They flock to it in thousands to stare at the stuffed animals, the birds and reptiles, and they go away just as wise as they came. As an educational institution it has never been attempted to utilise it in the least degree, and yet there is not the smallest reason why the new Curator should not be expected to afford scientific instruction to classes of native students, illustrating his teaching from the practical examples of the Museum shelves. If the educational advantages of the Museum were thus provided for, the University authorities would have no excuse for further delaying the revision of the curriculum for the B. A. degree, and the insistance on a fair knowledge of one or more branches of natural science by all candidates. We trust these remarks may not come too late.

DRESSER'S ENGLISH.

It has been a frequent complaint of the Professors of the local Medical College, that the know-

ledge of the English language by the native pupils of the Institution is so defective, as to interfere very seriously with their ability to understand the tutorial expositions of the Professors. There can be no doubt we think that the complaint is a just one, and that notwithstanding the higher standard of the entrance examination, of late years, many pupils come up to the College so ignorant of English, that scientific instruction by means of that language, must be very difficult, if not impracticable.

A friend in the mofussil has recently brought to our notice a wonderful specimen of composition, in the form of a Medical Certificate given by a Hospital Assistant to a patient who had his teeth loosened by a blow in the mouth. We print it below (suppressing names only), for the benefit of our readers.

" I do hereby certify that the Village Moon-
" siff ——— of ——— aged about 45 was found on
" my examination suffering from shaking of 2 front
" upper teeth, and 4 front lower teeth and besides
" several other teeth also in a slight shaking state.
" I consider that the shaking appear to have been
" caused by another individual, or by fall, or by na-
" tural of previous administration of cruel mercury.
" I am of opinion that the hurt is not a mortal.

(Signed) ———

2nd Class Hospl. Asst."

THE METRIC SYSTEM.

The Austro-Hungarian Empire has now adopted the Metric System of weights and measures, a law to this effect having been passed in July 1871. The standard meter is a glass rod, 999·99764 millimeters in length at O°C. The standard Kilogram, is a crystal glass cube weighing *in vacuo*, 999·9978 milligrams. Both have been made after the platinum

standards in Paris. In all official works the new system will be adopted from the 1st January next. Its use will be compulsory on all from the beginning of 1876. England and (strange to say) the United States will soon be the only countries in the world retaining old and inconvenient systems which are not even identical. In India a step has been taken in the right direction by making the official seer a Kilogram. The meter has been adopted also as the width of the State Railways.

UNIVERSITY INTELLIGENCE.

We understand that the following are the results of the recent Medical Examinations of the University. Mr. Rockwood has passed, in the First Class, for the degree of M. D. Mr. Matthew John has passed the Second M. B. and C. M. Examination, Second Class. Mr. William O'Hara has passed First M. B. and C. M. in the First Class ; and Mr. James Wilkins in the Second : and Mr. F. H. Pedroza has passed the Preliminary Scientific.

REVIEWS.

The Science and Practice of Medicine. By Dr. Aitken. Sixth Edition. London. Charles Griffin and Co.

Second Notice.

Dengue is a disease with which we have lately been brought into pretty close contact, and the chapter on this subject has naturally come in for a claim on our attention. The characteristics by which the disease is recognized are shortly but explicitly given. We notice that the recurrence of the excruciating pains in the limbs at a period long after the subsidence of the fever is not dwelt upon with sufficient force. This appears to have been one of the most noticeable symptoms in the epidemic which has recently visited this Presidency. This refers more especially to the cases of Europeans; in the native we find neither such degree of pain nor does the eruption always make itself apparent.

The chapter on Cholera interested and pleased us much. Here we find one of the best accounts of the disease, its history, the theories held by various authorities as to its pathology and the treatment advocated by each on the theory propounded by him. To reproduce in succession the views of theorists on such a subject as cholera without some small inaccuracies must be a matter of considerable difficulty. We find our author, however, equal to the task. Dr. George Johnson's theory of "elimination" is not believed in by many, although arguments in its favor are very carefully brought forward by its originator. Pettenkofer's germ theory and the absence of subsoil drainage in helping to propagate cholera germs have been proved, we think, to be of very little value. We are in possession of some facts which would militate strongly against a "zyme" theory. Hallier's doctrine of parasitic origin has lately been overturned by the investigations of one of the officers who have been detailed for this duty under the Government of India. Niemeyer's views on the subject are those which commend themselves to our mind; but we observe that brief notice is taken of the theory enunciated by

this the great pathologist who, we regret, has recently passed away from among us. A coloured lithographic representation of the growth of Hallier's fungi embellishes this part of the work.

In the second volume we find much which interests us as medical men in this country. Here we find Diabetes occupying twenty pages. No allusion is made to the frequency with which the disease is met with in these Eastern climes and the account here given could be well added to by the experiences of medical officers of the Indian service. If we might venture to offer a suggestion to the author, it would be to obtain from a few medical officers in each of the Presidencies their views on this very important subject. Dr. Donkin's treatment by employment of skimmed milk is not referred to by the author, although it has been said to have proved so successful in the mitigation of the symptoms.

Beri-beri, a disease the pathology of which yet remains in the dark, is fully treated. Dr. Evezard's experiences and his views are repeated at some length and the treatment which has been recommended by him stated. We would refer the author to a recent article published in this Journal on the pathology of this affection* by Assistant Surgeon D. Kearney of the Indian Medical Service of this Presidency. Here the origin of the disease is traced to the consumption of diseased rice at certain seasons of the year. The writer in this article draws an analogy between this affection and that produced by eating diseased rye (ergot of rye) in England. The theory appears to be not merely ingenious but based upon some reasonable grounds. Further experiences of others may confirm the views held by Dr. Kearney.

Sixty-eight pages are devoted to those diseases of the eye which may fall under the care of the physician. The subjects handled are the various ophthalmiæ. Pustular ophthalmia is said to be a lesion which is generally associated with scrofula. The experiences of ophthalmologists in this country agree in ascribing a large number of these cases which are treated in ophthalmic hospitals to the presence of round worms. We have ourselves witnessed the complete disappearance of these so-called pustules twenty-four hours after the expulsion of lumbrici by santonine. Keratitis among the corneal diseases is next treated of; after this

* Vide Madras Monthly Journal of Medical Science, Vol., V. p. 108.

the various forms of scleritis and iritis. Choroiditis including a short history of glaucoma follows. All mention of the surgical treatment of these diseases is omitted. Retinitis succeeds, and this chapter terminates with the diseases of the optic nerve which cause amblyopia and amaurosis. The whole of these subjects receive only a very cursory glance, so that we think they would have been better omitted from this work on medicine. Diseases of the eye more frequently are the study of the surgeon than of the physician and, therefore, we think so brief and incomplete an account of these diseases is next to useless. And in connection with this point we observe a similar mistake being made among the diseases of the digestive system; abscess of the cheek, ranula, abscess of the tongue, vascular tumor of the tongue, tongue-tie are briefly treated of in succession. These subjects we have always regarded as being surgical affections which very frequently have to be treated by means of the knife.

In the section upon Thoracic Diseases, we find a description given of the Sphygmograph and Laryngoscope. The former subject has been revised by Dr. Foster of Birmingham who has employed the instrument largely. Woodcut illustrations are added to these articles. In the former article representations of the pulse-waves in health and disease are given to assist those who may wish to employ the instrument, in arriving at a correct conclusion on the state of the heart-walls or the condition of the valves.

Hepatitis is a subject which has received a short notice from the author; hepatic abscess has gained more of his attention. In the treatment of the former and of simple enlargement (congestion of the liver) little or nothing is said of the advantage which undoubtedly is obtained by the employment of Chloride of Ammonium. That this salt exerts powerful action upon the liver there can be little room for questioning after a perusal of the contribution of Dr. William Stewart, H. M's. 2-21st Fusiliers to the medical papers. Ample proof exists that the initiatory inflammatory stage, prior to abscess formation, in the liver is checked by the exhibition of the salt, so as to warrant a strong opinion in its favor being expressed in any book of medicine. In the surgical treatment of abscess of the liver no mention of Dieulafoy's Pneumatic Aspirator is made. How has the author come to be guilty of such an omission when everybody who has heard of the instrument believes that death

occurring from such a disease can no longer take place while such a weapon is in the hands of any intelligent medical practitioner! From our experience of the instrument in evacuating the contents of an abscess, all the hopes we had at one time entertained have been entirely removed by the repeated exhibition of the failure which attended its employment when put to the test. We, therefore, find no cause to complain that the author has omitted all mention of the instrument. Perhaps his experiences may tally with ours.

Part IV of this work treats of "Medical Geography; or, the Geographical distribution of health and disease over the globe." This is a valuable part of the work. A well executed map illustrates what is written in the text. The work is supplied with a very copious index. With the exception of a few trifling typographical errors the work has been very well reproduced and offered to the profession, and we would recommend this as a valuable addition to the library of every medical practitioner as a work in which may be readily found an abstract of the views of a large number of authors and a record of the most recent methods of medical treatment. In conclusion, we would take the liberty of complimenting the author upon the successful issue of this, the sixth edition of his work.

On Spurious, Feigned and Concealed Pregnancy. By Thomas More Madden, M. D., M. R. I. A., &c., &c., &c.

Dr. Madden's article on spurious, feigned and concealed pregnancy has been reproduced in pamphlet form. In our Medical Miscellany for June last, we published an abstract of this valuable paper for the information of our readers. Dr. Madden's experience leads him to believe "that spurious pregnancy is most frequently observed about the turn of life." The symptoms, causes and diagnosis of pseudocyesis are briefly but clearly described and then follow several illustrative cases. Dr. Madden expesses great doubt "with regard to the value of auscultation, as a means of diagnosis for even in the 9th month of pregnancy, the placental souffle and the sounds of the fœtal heart may not be heard; while, on the other hand, he has come across cases in which medical men have persuaded themselves that they had heard

both placental souffle and the sounds of the fœtal heart, when no pregnancy existed.

We conclude this short notice of Dr. Madden's pamphlet by expressing our full concurrence with him, in his condemnation of the legal distinction between "a *quick* child or not." "Nor can anything more at variance with common sense and modern physiological science be conceived than retaining the barbarous distinction between a fœtus after the 16th week when *quickening* was supposed to occur and one before that period, as the veriest tyro in medical study should know that the living embryo at the moment after conception is as certainly living, or quick, as the fully matured man in the prime of his manhood and that the crime is as great to destroy the one as the other."

MEDICAL MISCELLANY.

*On Putrefaction.** By Dr. F. Crace Calvert, F.R.S.

This paper is intimately connected with those I have already published on protoplasmic life and the influence it effects on putrefaction.

I have already shown that when albumen from a new-laid egg is introduced into *pure distilled water* and communication with the atmosphere prevented, protoplasmic life does not appear. If the same solution, however, be exposed to the atmosphere for fifteen to forty-five minutes, minute globular bodies appear having an independent motion, which I denominate monads. The time required varies according to the time of the year, the amount of moisture present in the atmosphere, and the temperature.

Although M. Pasteur has already noticed the meteorological conditions which influence that life, he has not noticed the extraordinary rapidity with which the fluids are impregnated, and that this impregnation is proportional to the surface exposed.

On the 18th of May, 1871, two portions of albumen, measuring 400 grains, were placed, the one in a test-tube having a diameter of $\frac{3}{4}$ inch, the other in a test-glass which at the surface of the liquid had a diameter of 2 inches. In the tube vibrios appeared after twelve days, whilst in the glass only five days were required for their development. If in place of pure distilled water the water supplied by the Manchester Corporation (which is one of the purest waters in England) be used, the time required for the development of vibrios in a test-tube was only twenty-four hours.

These experiments prove that the rate of development of vibrio life is influenced by the extent of surface exposed.

M. Pasteur has already demonstrated that oxygen is essential to the life of the Mucedines, but I am not aware, that it has been proved that this gas is necessary to the existence of vibrio life.

In the hope of throwing some light on this subject, the following experiments were made:—

Into each of five glass bulbs equal volumes of a solution of albumen in Manchester water were placed, and the first left in contact with the atmosphere for twenty-four hours, after which the ends of the tube were hermetically sealed about 2 inches on each side of the bulb. After passing oxygen, hydrogen, nitrogen, and carbonic acid over the other four solutions, the tubes were

* Abstract of a Paper read before the Royal Society.

also hermetically sealed. These tubes were kept closed for twenty-seven days, during which it was observed that the albumen in the bulb containing oxygen speedily became turbid, then the one containing air, while the other three remained clear. After this period the tubes were broken and the contents examined. A large quantity of vibrio life was found in those containing oxygen and common air, whilst those containing nitrogen, carbonic acid, and hydrogen contained very small quantities, that with hydrogen the least, Thus proving that oxygen is an essential element to the production of putrefactive vibrios.

In further support of this view, I may state that under certain conditions these animalcules produce such an amount of carbonic acid and other gases as to exclude oxygen to such an extent that their own development and life are impaired.

This is easily proved by taking albumen full of animalcules, but not emitting any putrid odour, and placing it in test-tubes, closing some and leaving others open. If these tubes are examined after a few weeks, it will be observed that in those left in the air life has much increased, and they emit a very putrid odour; whilst the life in the closed tubes not only has not increased, but appears to be in a dormant condition; for if the corks are removed and the fluid again comes in contact with the oxygen of the air, its activity returns. The albumen also in the closed tubes does not emit any putrid odour.

M. Pasteur has also found that oxygen was necessary to the vibrios of putrefaction, although the same gas destroyed those produced in butyric fermentation; but he has not made any experiments to show that the products emitted by such vibrios are prejudicial to their development, and even to their power of locomotion.

Having stated above that liquids exposed to the atmosphere become impregnated with monads, I will now try to describe their gradual development into vibrios, and their ultimate transformation into microzyma.

A few hours after the albuminous fluid becomes impregnated, the monads, which have a diameter of about $\frac{1}{128000}$th of an inch, appear to form masses. Then some of the monads become elongated into vibrios, which, though attached to the mass, have an independent motion; so that as the force exerted by the vibrios predominates towards one or another direction, so is the mass moved over the field of the microscope. As the development proceeds, the mass is broken up, and ultimately each vibrio has an independent existence, and may be seen swimming or rolling about in the fluid. Their size at this stage is about $\frac{1}{20000}$th of an inch. These, which I call ordinary vibrios, gradually grow into long vibrios, which attain a length of $\frac{1}{6400}$th of an inch.

These long vibrios gradually become changed into cells, which

I have called microzyms. The first process in the transformation is its division into two independent bodies. One extremely faint line appears across the centre of the animalcule, and increases in distinctness until the vibrio appears like two smaller vibrios joined together. The separation takes place and each part acquires an independent existence. These parts again divide, and the process of subdivision is carried on until they appear to be nothing more than cells, which have a swimming-power so great as to pass over the field of the microscope with rapidity.

After twelve or eighteen months all the vibrios disappear and are replaced by microzyms, either in motion or at rest. If these microzyms are placed in a solution of fresh albumen, vibrios are abundantly developed. The apparent explanation of this fact is that in the fresh albumen they have all the circumstances favourable to their growth and reproduction, while the putrid albumen has become so completely modified as to be incapable of affording them the requisite conditions for reproduction.

I may also notice that at the same time a deposit has taken place which, under the microscope, appears to consist of shoals of small particles of matter which have no life. The solution has now become perfectly clear, possesses considerable refractive power, and has lost the property of becoming coagulated by heat.

The albumen solution does not emit a putrid odour until after the formation of the above-mentioned deposit, and the amount of odour is in direct ratio to the number of vibrios present.

I remarked during the investigation the presence of several other forms of animalcules which contribute to the decomposition and putrefaction of proteine substances, the description of which will be found in the original memoir.—*The Chemical News.*

Spontaneous Combustion.

In March last, a well-known Detroit druggist, assisted by two seriously inclined and science-loving gentlemen, resolved to make a number of experiments to test the worth of the talk about spontaneous combustion, and their experiments are well worth the attention of every reader.

They first took a piece of cotton cloth, which had once formed part of a sheet, and which had been used until quite threadbare, and smeared it with boiled linseed oil. An old chest was placed in the loft of a store-room back of the drug store, a piece of zinc over it, another piece under it, and then the chest filled with paper and rags, and this particular piece of cloth placed in the centre. Although the room was not a light one, and the weather cold, in eight days there was such a smell of fire about the trunk

and the chances were so good for a conflagration within it, that the contents were emptied.

An examination showed that the fibre of the oil-cloth had untwisted and shrivelled up, and that the rag looked as if it had been held too near a hot blaze. In April, when the rays of the sun were stronger, a pair of painter's overalls, literally covered with paint and oil, were rolled up, a handful of pine shavings placed inside, and these were crowded in next to the roof boards of the loft. The experiment was not a week old when, during one warm afternoon, a smell of smoke alarmed a workman in the next room, and he found the overalls burning, and so tinder-like was the cloth that it had to be crowded into a pail of water to prevent total destruction.

During the hot weather of August, a handful of old cotton rags, in which two matches were placed, but which were not smeared with oil or other matter, were shut up in a tin box and hung up in the loft, a rear window allowing the afternoon sun to shine directly on the box for several hours. Toward the close of the fourth day the druggist took down the box to see how the experiment was progressing, and found the contents to consist of nothing but a puff of black cinders, which flew all over him as the lid was lifted. Having a vacant corner in his brick woodhouse at home, the druggist took the trunk up there, where there was no danger of burning a building. He filled the trunk with the contents of the paper rag-bag, and then smeared one with benzine and threw it in last of all. The trunk was shut tight, everything cleared away from its vicinity, and he commenced watching. One day the family came home to find a few ashes marking the place where the trunk stood, while the bricks above and around were badly stained with smoke.—*Scientific Press.*

Small-Pox treated by Xylol, &c. Dr. Russell's Clinic.*

Dr. Russell has had many cases of small-pox under his care, and his experience as to xylol and other remedies is given in the new number of the *Glasgow Medical Journal.* We propose to give the cases detailed, and extracts of his remarks, for the subject is of great importance, and Dr. Russell's powers of observation are of a high order, so that his clinical work is of great value. Our columns have already contained notices of the new remedy, and its chemical qualities have been reported upon for us by Mr. C. R. C. Tichborne. Dr. Zuelzer, however, appears to have given Dr. Russell a few notes, and we may as well begin by quoting his letter. Dr. Zuelzer, writes—

"Xylol is one of the products of the distillation of coal, and

*Glasgow Fever Hospital.

boils between 138° and 140° C. The boiling point is the best test of the purity of xylol, which is not very good and free from other products, as obtained in the pharmacies of Berlin. It is a member of the Benzol series—Dimethyl-benzol—$C_6 H_4 (C H_3)_2$. Introduced into the system, it becomes changed into acid of Toluyl—$C_6 H_4 \begin{cases} C H_3 + H_2 O \\ C \quad O \quad H. \end{cases}$ This product assumes one atom of Glycocoll ($C H_2 (N H_2) C O O H$), and appears in the urine as acid of Tolure. The latter is an acid of some strength, and its salts are not injurious to the system. Another quality of xylol is, like other similar products, to coagulate albumen.

"I give xylol with good effect in cases of *Variola pustulosa*. Such cases are very much quicker dried than others; the fever is shorter, there is no secondary fever, and the cerebral symptoms are very insignificant. In cases of *V. hæmorrhagica nigra*, I have not remarked any effect. I give it by mouth in doses of 10, 15, 20 drops every hour, or every second or third hour, alone, with wine (claret or sherry), or in *capsulæ gelatinosæ*. It is best to begin as early as possible with xylol." (Dated 12th April, 1872.

It would appear from these remarks that Dr. Zuelzer believes that by the use of xylol he can modify the normal course of the disease—a breadth of effect which will be difficult to demonstrate even if we allow ourselves to indulge the hope that it exists. Dr. Russell remarks—"Although I have no wish to prejudge the case, still the whole tendency of my experience of diseases such as small-pox, arising from the constitutional effects of a specific poison, as well as my recollections of their therapeutic history, lead me to be sceptical as to specific, aborting or antidotal treatment, and only, in the meantime, to look hopefully on symptomatic treatment. It is to be remarked, however, that small-pox itself furnishes us with a unique illustration of the antidotal treatment of disease, and one which may prove also typical of a large class of true antidotes—I mean the administration of the vaccine virus, so as to modify the variolous virus (the former being the latter modified by the cow). When we vaccinate an infant in a small-pox ward, who has been nursed by a variolous mother, and on the tenth or eleventh day thereafter an eruption of small-pox appears, but is very scanty, and aborts in a day or so, we imitate as closely as possible a laboratory experiment with poisons which are antagonistic, not chemically, but in physiological action.* There is no doubt that in the infant's body there was a dose of variolous poison which would in due time have sprung into violent activity, but which was, by the intro-

* See paper "On the Antagonism between the Actions of Physostigma and Atropia." By Dr. Fraser. "Transactions of the Royal Society of Edinburgh." Vol. xxvi. p. 617.

duction of the vaccine poison, completely diverted from its normal course and made comparatively innocent. There is also no doubt that, both poisons being at the same time within the system, the one poison acted somehow either directly on the other poison or on the tissues, so as to modify the physiological action of the other. An infant vaccinated in the usual way, and introduced a fortnight after into a small-pox ward is uninfluenced by the variolous poison; and an infant unvaccinated will be influenced severely. Still, notwithstanding this antagonism between the two poisons, if the variolous poison has already become active in the system, when the vaccine poison is introduced, no such antagonistic effect is observed; the local irritation of the vaccine poison simply assumes an unhealthy action, the contents of the vesicle become rapidly purulent, and the variola goes on uninfluenced. It seems to me that this easily executed and well-known experiment furnishes an *a priori* reason against the efficacy of xylol or any other agent in diverting the variolous poison from its normal course; over and above the well-known failure of all such attempts in the class of diseases which are caused by similar animal poisons."

Dr. Russell remarks—"1. That in the course of small-pox, as seen in *vaccinated* persons, and without any treatment whatever, *phenomena are observed which never occur in small-pox as seen in unvaccinated persons;* that these phenomena are such as we aim at by treatment—short fever, rapid development of the eruption, abortion of the whole process suddenly at any stage, and even when it is of a malignant type. 2. That seeing these phenomena never occur in unvaccinated persons, and frequently occur in vaccinated, it is only the former which we can treat experimentally without risk of fallacy."

The very mildest conclusion which can be drawn from these remarks is that if an experimenter chooses to experiment on vaccinated variolous patients, *the fact is a cardinal one and ought to be stated foremost in the details of his cases.* Without precise information on this point, no reliance whatever can be placed upon inferences as to treatment. Dr. Russell lays great emphasis upon this, because it is remarkable how common it is to publish histories of cases and statistics in which small-pox is treated as a homogeneous desease, a procedure which is worse than publishing as cures cases in which we are told there was a good vaccine mark, as in the latter case *all* the facts are given, and we can form our own opinion. He gives two very marked illustrations, one from home, the other from foreign literature, and criticises them in appropriate terms.

Case I.—Colin McI., æt. 28, admitted 10th Feb., 1872. *Unvaccinated*, and in 5th day of confluent small-pox.

The xylol was not obtained until the 15th February, 10th of

the disease, from the afternoon of which day the patient got min. xx. in water every three hours. On the 12th day face and scalp presented a uniform surface of pale yellow, soft pus in process of drying; but on limbs and body the pustules were still full, with broad areolæ. The pulse had fallen from 134 (on the 10th day) to 120. In the evening it was 112. On the 13th day it was 104, and there was a subsidence of activity of eruption on limbs and body. On the 14th day the pulse was 100, and pustules burst on all parts of body. On the 17th day the crusts were beginning to separate, pulse 96. The xylol was stopped.

N.B —This patient had a crop of boils all over body and limbs, and also a large abscess in left arm. The boils produced inert sores, which became fungus-like, and were very long in healing. Patient, who was a vigorous, muscular man at the outset, continued emaciated, and convalesced very slowly.

Case II.—Thomas B., æt. 28, admitted 9th February, 1872. *One bad v. mark* on the right arm. In 4th day of what proved to be confluent small-pox.

The xylol was not commenced till 15th February, being the 10th day of disease, when from 2·30 p.m., onwards min. xx. were given every three hours. Before that time, however, the rapid breathing and rising pulse showed that the pulmonary congestion, which ended fatally on 16th at 8.15 a.m., had already commenced.

Case III.—Donald M'L., æt. 24, admitted 27th February, 1872, *unvaccinated*. In 4th day of small-pox, with very copious rash. From the 5th day this patient had thirty drops of xylol every two hours. He died on the 17th day, of gangrene of the lungs. As this is an interesting case, and one in which the drug had a good trial, I shall give full notes of it.

Feb. 28th (5th day).—P. 96. Very copious vesicular eruption, very small, with some lividity intervening. No motion. Slept. Give castor-oil, and begin X., thirty drops every two hours.

Evening.—P. 104. Still no motion. Repeat oil.

29th (6th day).—Commencing pustulation on face. Slept well. Bowels freely moved.

March 1st (7th day).—P. 108. Eruption very pale. Considerable œdema of face, and much lividity surrounding pustules. A few pustules and vesicles show a distinct *hæmorrhagic centre*. Slept none, and passed on the whole a restless night. Motion.

Evening.—P. 120. No sleep; no motion.

2nd (8th day).—P. 106. Pustulation more advanced, and on face the pustules are yellowish, with increase of œdema. No motion; restless.

Evening.—P. 124. Motion; only little sleep.

3rd (9th day).—P. 112. Passed a restless, almost sleepless

night. Here and there on face are points of yellow pus; otherwise eruption is pale.

4th (10th day).—P. 120. Crustation pretty general on face. Œdema and accompanying lividity are decidedly less on trunk. Breathes quietly; restless, almost sleepless night. Bowels moved.

5th (11th day).—P. 128. Passed a very restless and quite sleepless night. Respirations rather hurried, and pulse soft. Give ʒ iv. whisky.

6th (12th day).—P. 124, improved. Crustation complete on face; majority of pustules still unburst on trunk, but they are less active. Slept about three hours; respirations quiet and good; no motion; give oil.

7th (13th day).—P. 112. Crustation slowly progressing on body; still no motion; repeat oil.

Evening.—P. 128. Bowels freely moved.

8th (14th day).—P. 124, soft and shaky. Slight separation of scabs from face. Some pustules on limbs have coalesced so as to form large blebs. Breathes fairly, feels better, bowels free.

Evening.—P. 132, rather feeble. Passed a restless day, always endeavouring to rise. Bowels free.

9th (15th day).—P. 132, still shaky. Sleepless night; pustules now burst generally. Left cornea rather cloudy. Breathes fairly. Had a slight rigor at 8 a.m.

Evening.—P. 136, soft. Respirations somewhat hurried and laboured: is very restless. Drinks badly. Give ʒ ss whisky every hour.

10th (16th day). P. soft. Respirations still the same. Cloudiness of cornea less. Has drunk fairly during night. Seems less restless and is still pretty sensible.

Evening.—P. 160. Respirations more rapid and laboured. Evidently sinking.

11th (17th day).—Died at 9. 15 a.m.

Post mortem examination showed the immediate cause of death to be gangrene of part of one lung and intense hypostatic congestion of greater part of the other.—*Med. Press and Circ.*

Itch; its easy and rapid cure.

Carbolic acid in solution, 4 grams in a litre of water; or, easier still, a pomade of 8 grams of Carbolic acid to 125 grams of ointment. Three or four frictions in twenty-four hours are sufficient for the destruction of the acarus; after which a complete bath, with white soap in solution added, should be taken—*Jour. des. Conn. Méd.*

On the Application of Gases as a means of destroying Contagion. By Dr. Cameron, Analyst to the City of Dublin.*

There is, he said, no evidence of a satisfactory nature to prove that the ordinary emanations from decomposing animal or vegetable substances are the cause, *per se*, of any contagious disease.

It is more reasonable to believe that zymotic diseases are each of them produced by the introduction of a specific *virus* or *germ* into the animal economy. It is probable that some zymotics are caused by germs which are incapable of multiplication in the body. Such diseases are not, therefore, contagious in the ordinary sense of that word—that is, they are not propagated by matters which are cast forth from the bodies of the sick. In the valuable Report on Yellow Fever, prepared by Dr. J. C. Nott, and published in the Annual Report of the Board of Health of the City of New York, for 1870-71, very strong evidence is adduced to prove that yellow fever is caused by germs, which are not bred within the body. It is, however, shown that those germs may be transported from place to place in the clothes and baggage of men. Dr. Nott brings forward the most convincing proof that decomposing organic matter does not, *per se*, produce yellow fever; and shows that the germs which cause the malady are devitalised by exposure to a temperature of 32° Fahrenheit.

The use of disinfectants is, however, to be commended, because they preserve the atmosphere free from malodorous gases and vapours. Some kinds of so-called disinfectants are also of great utility as a means of preventing the putrefactive decomposition of organic substances. These disinfectants are properly termed antiseptics. They do not altogether prevent animal and vegetable matters from decay; but they greatly retard that process, and then decomposition without sensible putrescence only takes place.

What is it that we try to destroy when we generate chlorine gas in a room which has been tenanted by a small-pox patient? Is it a gas, or a vapour, or an abnormal condition of one or more of the ordinary constituents of the atmosphere? If the cause of the disease lies in an abnormal condition of the atmosphere—in the occurence of a "pandemic wave" in that fluid, the disinfection of the air of a particular room, would be useless, because, where ordinary ventilation is adopted, the purely gaseous contents of an apartment are wholly renewed many times in an hour. What, therefore, would be the use of disinfecting a room if the atmosphere, on entering it, be already tainted! If cholera, small-

* Paper read before Medical Society of the College of Physicians.

pox, rinderpest, and other zymotic and epizöotic diseases are caused by abnormal atmospheric conditions, why is it that they speed along the highways of commerce, that they spread most rapidly as the density of population increases, and that they prevail most in those places where least attention is paid to the removal of organic filth? If the amount of carbonic acid in the atmosphere were increased from its normal proportion of 4 parts in 10,000 parts of atmospheric air to 4 parts in 100, serious disease would be the result; but it would afflict all classes alike, and would ravage the country regions equally with the urban districts.

A careful examination of acknowledged facts relative to nearly all the more important epidemic diseases fully justifies the belief that each is produced by the introduction of a *materies morbi*, or germ, or virus, or some palpable substance from the bodies of the sick into those of the healthy; and by that way alone. This view of the mode of propagation of zymotic diseases is, perhaps, most conclusively proved by admitted facts in relation to two contagious diseases—namely, *scabies*, or common itch, and syphilis.

The itch is a good example for the purpose of illustrating the nature of contagion. The *materies morbi* is easily seen; it is an entity, it possesses reproductive powers, begetting its own kind, and it is never found except in the bodies of higher animals. The non-contagionists must admit that at least in the case of this disease the theory of the contagionists is proved to demonstration, and simply because the virus of the disease is so large as to be almost seen by the unassisted eye.

In general the contagious matter appears to be excessively minute. Chauveau (*Comptes Rendus*, October 19th, 1868), diluted the liquid taken from the pustules of sheep-pox with 10,000 parts of water and found that it still retained its power of producing small-pox in the sheep. Vaccine matter from man may be diluted with ten times its weight of water without losing its contagious property to a sensible extent, but if diluted with 500 parts, it becomes perfectly inactive. Hence it is evident that the contagious liquid of sheep-pox is many times more powerful than vaccine, probably because it contains a larger number of the actual particles, or germs that produce disease. These germs have been carefully sought for by eminent pathologists and microscopists. On the whole, the results of the investigations of these inquirers have not been barren. It is shown that vaccine contains, in suspension, minute quantities of two kinds of solid particles—*leucocytes* (which resemble pus corpuscles), and smaller particles not exceeding the 1-20,000th of an inch in diameter. The leucocytes may be easily separated from the other particles and the serum; and they are found to be perfectly inactive. The vaccine property must, therefore, reside either in the small particles or the

clear serum. By means of the diffusion apparatus, Burdon-Sanderson and Chauveau have succeeded in obtaining the serum free from the small particles, but failed to produce vaccinia with it either in man or in the ox. These important and accurately conducted experiments prove that the actual cause of cow-pox, and inferentially of other kinds of small-pox is a minute solid and insoluble body.

It has been strongly urged as an argument against the germ theory of disease that it fails to account for epidemics. Why should small-pox die out in Ireland, and then suddenly re-appear and rage with great violence in many parts during the last twelve months? How is it that cholera periodically invades the west from the east? Why does an epidemic gradually increase in intensity, attain a maximum of virulence, and then gradually die out? It is difficult to answer these questions satisfactorily, because all the factors concerned in the propagation of zymotic diseases are not known.

If it be admitted that small-pox and certain other diseases are sometimes caused by matters thrown off from the sick making an entry into the bodies of healthy persons, then the phenomena of epidemics may be shown to be explicable without abandoning the theory that small-pox (and some other diseases) are only communicable from individual to individual. We can readily understand that the low forms of life which produce epidemic and epzootic disease might, under favourable circumstances, multiply to a greater extent than usual. Under such circumstances the chances of their getting into the bodies of animals would be proportionately increased, and a local epidemic would be the result. Intercommunication between the place where the germs were first developed and other places would soon scatter them over areas more or less considerable.

In some epiphytic diseases we find the analogues of epidemic and epizootic maladies. The "blights" in the cereals and other plants are caused by the ravages of minute parasitical fungi. A common disease of wheat grain is occasioned by the presence of the fungus *Uredo caries*, the seeds, or sporules of which are so minute that, according to Bauer, a single grain of wheat may contain 4,000,000 of them. The fungi which produce the diseases of plants do not originate sporadically, nor are they ever found except as parasites. For years a whole locality may be absolutely or comparatively free from them, when suddenly those pests will appear and destroy whole crops. It is the same with respect to the ravages of plants by insects; suddenly the caterpillars of moths will appear in vast numbers in localities where they had previously been very scarce. A few years ago the extensive plantations at Dunsany Castle, county of Meath, became suddenly the abode of myriads

of caterpillars, which speedily stripped the barks and leaves of a large proportion of the trees.

If species of bacteria or similar objects are the contagia of certain diseases, then we can understand why it is that so many persons who are near small-pox and fever patients escape, whilst persons not in contact with the infected catch the disease. The bacteria thrown off from the bodies of the sick are not equally diffused throughout the air as a gas or vapour would be, but, for the most part, are scattered about on the clothes and on other solid surfaces, from which they may be conveyed to great distances without making their entry into the body of any one. Contagion in general is conveyed by means of clothes or other solid substances, and is rarely directly propagated through the air. In the Report on Yellow Fever, by J. C. Nott, that writer says:—

"No evidence, I think, could be more complete to establish the probability of a disease. All facts being opposed to its contagiousness, I can come to but one conclusion, viz., that the germ may be closed up in trunks or boxes, or be shut up in the baggage car of the railroad, transported from one point to another. I have never seen anybody communicate the disease where luggage was not taken with the patient, and that the disease generally goes everywhere that steamboats go from our infected ports in epidemic years, I see no other conclusion than the one I have before given, viz., that the germ is carried closed up with baggage, and not generated and communicated by personal contagion."

Before the question of bacteria as a cause of zymotics arose, Haygarth, Murchison, Ryan of Lyons, and others denied that small-pox poison was directly transmitted through any considerable space in the open air. Murchison asserts that the poison was not contagious in the open air at a distance of half a yard. Chauveau states that the contagious matter of small-pox is volatile—that the solid particles float into the air at a temperature of 40 degs. centigrade, but in his experiments the matter was carried away by a current of vapour.

The results of several experiments made by the author show that bacteria and the contagious particles of vaccine lymph resist, when protected by an extremely thin film of solid or semi-solid matters, the action of chlorine and sulphurous acid gases applied to them in larger quantities than are usually employed in disinfection. The filtered meat-juice used in these experiments contained only five grains of solid matter per ounce of 480 grains—less than one per cent. The object glasses were dipped in this liquid, and many of them allowed to drain before being subjected to experiment. We may readily conceive then how extremely thin the film was that separated the bacteria from the gases set free. It is extremely improbable that the actual contagious

particles of small-pox or cholera, or similar diseases, are ever detached from the serum and other matter with which they associated when thrown off from the body. They are, no doubt, invested with some such film as that which protects the contagious granules in vaccine. If ordinary gaseous disinfection sometimes fail to destroy the vitality of vaccine, and has no effect on ordinary microzymes, we cannot rely upon it as a means of-destroying the contagiums of zymotic diseases which certainly are near akin, if not to bacteria, at least to the virus of vaccine. The recent experiments of Crace Calvert show that bacteria sustain a very high temperature without being killed; and, on the other hand, Melsens in the *Journal de Pharmacie et de Chimie* for September, 1870, shows that vaccine lymph retains its activity when exposed to the intense cold of 80° [*sic*] centigrade. The low forms of life are often capable of resisting influences which, in the case of the most highly organised animals, would produce fatal results.

No doubt, chlorine, sulphurous acid, and some others of the so-called disinfectants, destroy bacteria and contagia; but in order to do this they must be employed in much larger quantities than they have hitherto been used.

The complete disinfection of a room tainted with the poison of contagious disease can only be accomplished by the most thorough cleansing. The paper should be removed from the walls, and the latter scraped. The ceiling should be washed and whitewashed, the woodwork and floors should be scoured—all these detergent processes remove—probably without destroying them—the contagious particles. The old-fashioned plan of simply whitewashing the walls and ceiling of a room, and washing the woodwork has much to commend it, and it is infinitely more efficacious than gaseous disinfection without liquid applications. If the whitewash does not kill the bacteria, it certainly imprisons them securely.—*Med. Press and Circ.*

Fever and the Sewers.

After all that was said at the time of the Prince of Wales' illness, the public will be glad to learn, on authority, that the men employed in the sewers are not only not carried off by fever, but appear singularly free from the ravages of that disease. At the instigation of Dr. Brewer, says the *Medical Press*, the Metropolitan Board of Works ordered a return on the subject, which has just been issued, and is quite conclusive.

Out of 5 inspectors employed from 23 to 48 years, there has never been a case of fever. Out of 64 men employed in cleansing and flushing the northern sewers for periods varying up to 34 years, only 2 have had fever, and their cases were typhus. Out

of 47 men engaged in the sewer work in the southern sewers for periods varying from 1 to 24 years, there have only been 2 cases of fever, and these again typhus, and in one of these cases it is shown that the disease was contracted from the man's family. There are 36 penstock and flap-keepers who have been employed from 1 to 50 years. Of all these, only one has had any fever. He has been 16 years at work, and had typhoid in 1862. There are some curious notes about these men. One of them has been at this work 50 years, and has not had one day's illness during the time. One lived 25 years in the sluice house over the King's Scholars pond sewer, but never had any fever. Another lived for 14 years in Penstock House, over outfall sewer at Old Ford. Another lived 32 years in Great St. John's sluice house. Another lived for 35 years in a house over Duffield sluice, and enjoyed good health. Out of 54 men employed at the pumping stations, there has only been one case of fever (typhoid).

At Crossness, out of 54 men engaged during the last 6 years, there has not been one case of typhus or typhoid. There have been 8 cases of ague, but these are of course due to the low marshy district, and they seem to have recovered rapidly. Out of 7 men employed in cleansing ventilators, oiling side entrances, gauges, &c., no case of fever has occurred, though one man has been at the work 23 years. Of 10 surveyors and chainmen in the engineer's office, not one has ever had typhoid fever, although they have been almost daily engaged in the sewers for periods of from 4 to 24 years.—*The Doctor.*

Forcible Manual Delivery in Puerperal Convulsions. By John M. Julian, M.D., New York.

The small number of reported cases of manual version in puerperal convulsions prompts me to offer a contribution to the subject, with a view of calling the attention of the profession to an efficient means of saving the life of mother and child, which means have not received the attention which, in my opinion, they deserve. This is more particularly the case since anæsthetics have been found to be so useful in the management of the various complications of labor.

I was first led to favor forcible manual delivery by hearing of the death in convulsions of a primipara undelivered, aged 19, eight months advanced, whom I had visited incidentally. In that case I learned that the persistent administration of chloroform had no result whatsoever.

After having seen this case, I determined to try, in a similar case, the effect of forcible delivery. An opportunity for so doing soon presented itself. On the 9th of June, 1864, I was called to

see Mary M., æt. 21. She was six and a half months pregnant, had been eight hours in convulsions, was uræmic, had stertorous breathing, pulse rapid and feeble, pupils insensible to light, and the os barely admitting the end of the index. With much less difficulty than I had previously anticipated, my hand was introduced into the vagina, next the index, and subsequently, one by one, all the other fingers were forced through the os; next the hand was passed into the uterus; one knee was hooked and brought down and the delivery of a male child accomplished, in the course of about twenty minutes. The convulsions did not return after delivery: but she never rallied, and expired the next day.

Case II.—Reached Mrs. S.'s bedside September 8th, 1864 (town of Guttenberg), æt. 36, primipara, who was in labor, had frightful œdema of body, was insensible, and had stertorous breathing. Had been fifteen hours in convulsions; os admitting the end of the index finger. I administered chloroform at once, and thereby controlled convulsions, so as to enable me to deliver a pair of male twins, the first by version, being still-born; the other, by pedal extraction; alive. There was one slight convulsion three hours after delivery. Consciousness returned the next morning, the albumen disappeared at the end of the sixth day, and mother and child made a rapid recovery.

Case III.—Saw. Mrs. S., æt. 23, in consultation, Nov. 21, 1865; primipara, with the usual uræmic symptoms; had been fourteen and one-half hours in convulsions; insensible and stertorous since first attacked; os undilated, no apparent symptoms of labor present; digital and manual dilatation and version performed in less than thirty minutes, (with sanction of her medical attendants), in the usual way, under chloroform. One slight convulsion three hours after delivery; she remained insensible and afterwards delirious for over forty-eight hours, from which she recovered; but succumbed, one month from date of delivery, to an attack of pleuro-pneumonia. Child ever after subject to occasional epileptic convulsion, died two years after, of cerebral disease.

Case IV.—Saw, in consultation, on the first of March, 1866, at 11 A.M., Mrs. M. Stage of pregnancy, eight and one-half months, primipara, urine two-thirds albuminous, countenance anæmic, fixed pain in forehead, nausea, pulse rapid and feeble. Counselled induction of labor. At 5 P.M. a convulsion occurred. At $9\frac{1}{2}$ P.M., with the concurrence of her medical attendant, she being fully conscious and about the room at the time, os closed, was placed in the recumbent posture, and fully anæsthetized. I inserted my hand as before (encountering this time a little more rigidity than usual), and delivered twins—the first child by version. Both children lived. The mother made a rapid and uninterrupted recovery, the operation occupying about half an hour's time.

Case V.—Saw, on August 4, same year, a next-door neighbour to Mrs. M., Mrs. W. Stage of pregnancy said to be eight months. Had been about ten hours in convulsions; primipara, uræmic, deep stertor, pulse rapid and feeble, circulation apparently ceasing. Had been previously to my coming ineffectually anæsthetized during several hours; os undilated. I proceeded at once to deliver in the usual way, which was soon accomplished, this time without anæsthesia. The convulsions ceased after delivery, but she expired the next day.

Case VI.—Mrs. J., æt. 22, secundipara, who, during her previous pregnancy (sixteen months from date), had suffered from uræmic convulsions, ending, five or six weeks after their occurrence, by the spontaneous expulsion of a decomposed fœtus, whose growth appeared to be of about five months. I was requested to see her on the 5th of March, 1869, at 4 A. M.; said to be in her seventh month; face and lower extremities œdematous; headache, nausea, pulse about 54 had had two convulsions previous to my coming; medical attendant gone home $12\frac{1}{2}$ P.M.; return of convulsions and vomiting, pulse 40; insensible, os closed, no symptom of labor. I at once proceeded to perform version under chloroform, and in the usual and above-described way, which was accomplished in about twenty minutes: child a male one, non-viable. The convulsions never returned, consciousness became gradually restored, and she made a rapid recovery. On the 6th of June 1871, she was again spontaneously delivered at eight months of another male child, but this time without convulsions; child died on the twelfth day, of epileptic convulsions; albumen was again detected in Mrs. J.'s urine.

In conclusion, I will state that my object in publishing the above has been to induce others to give the result of their experience in this matter, and help to establish, by a sufficient number of precedents, the propriety or impropriety of the operation. Inasmuch as a great number of obstetrical authorities look upon the measure as a most desirable one if it can be accomplished without injury or detriment to the patient, I think that on this point the general result of my cases ought to have a tendency to dispose of this objection, and demonstrate that the operation can *à priori* be performed with tolerable safety and celerity. They also suggest the belief that, under full anæsthesia, the question of non-dilatability of the os has not been as yet properly or sufficiently looked into; and that, at least in special cases, this operation ought to take precedence over the safer but more tardy rule of induction.

Therefore, I feel most sanguine in the belief, that should this mode of procedure be more generally followed, in like emergency, the mortality tables of puerperal convulsions would become notably improved, and the lives of fewer women and children sacrificed.

In corroboration of the preceding remarks I beg to observe that in a very extensive search made into the literature of the subject on manual dilatation in puerperal eclampsia, I have found but five cases which, however, fully substantiate my views: one of these will be found by Noeggerath and Jacobi, another by Dr. Paget, one by Dr. J. H. Ross, and two by Dr. Holland, copied from the *Lancet*, and found in Braithwaite's Retrospect Vol. lxiv., the results of all of which were successful, and one equally successful in Milne.

I will further observe that the large sanguineous depletion deemed indispensable, and so firmly relied on, is falling into disfavor. In the Guy's Hospital Reports for 1871 will be found a series of cases, by Dr. Philips, in which bleeding was not resorted to, and chloroform mainly relied upon for the control of convulsions; a practice which has likewise been followed, in the latter part of his life, by our late distinguished fellow-townsman, Prof. Geo. T. Elliot.—*The Medical Record.*

MEDICAL INTELLIGENCE.

(General Orders by the Governor in Council.)

Conveyance.—Hospital Equipments.

27th June 1872.

No. 689 of 1872.—With reference to G. G. O. No. 830 of 1871,* His Excellency the Governor-General in Council is pleased to publish, for general information and guidance, the following scale of carriage to be allowed for the conveyance of the revised hospital equipment of troops on the line of march.

	No. of maunds.	No. of carts of 2 bullocks.
Regiment of British Cavalry and Infantry...	30	3
Wing of British Cavalry with head quarters	18	$1\frac{3}{4}$
Do. do. do.	15	$1\frac{1}{2}$
Troop of British Cavalry, Company of Royal Engineers, British Infantry or Sappers and Miners,..	4	1
Battery of Horse or Field Artillery ...	6	1
Do. Garrison do.	4	1
Regiment of Native Cavalry or Infantry.	22	$2\frac{1}{4}$
Wing of do. do. ...	12	$1\frac{1}{4}$
Troop Company do. do. ...	3	$\frac{1}{2}$

This cancels G. G. O. No. 533† of the 14th May 1872.

* Madras G. O. G. 6th October 1871, No. 241.

† Madras, G. O. G. 28th May 1872, No. 139.

Tents.

5th July 1872.

No. 170 of 1872.—With reference to G. O. C. C., No. 116, dated 11th September 1865, the Right Honorable the Governor in Council notifies that officers of British Regiments on arrival in this country, will be allowed one year to provide themselves with tents, and in the event of their being required to march within that period, tents will be provided for them from the Public Stores.

2. When tents are issued under the foregoing rule, a monthly rent as per margin will be charged for them, and the officers will be liable to pay for deficiencies, or for damage other than such as may justly be attributable to fair wear and tear.

	Cost. Rs.	Rent. Rs.
Tent, Field Officers	... 570	10
,, Captains	... 377	7
,, Subalterns	... 323	6
,, Hill, 11 feet square.	249	5
,, Hill, 8 feet square.	219	4
,, Staff Serjeants	... 224	4
,, European	... 383	7
,, Native	... 129	3
,, Necessary	... 28	½

3. The tents will be obtained by indents "passed" with the words "for payment of the authorized rent monthly." The Ordnance Examiner will take measures for the realization of the rents.

4. When such tents are returned into Stores, the receiving officer will at once report to the Quarter Master General what damage, if any, is chargeable, and the latter officer, on the bill being approved, will notify the same to the Ordnance Examiner, with a view to the amount being recovered from the officers concerned.

Medical Fund Annuities.

5th July 1872.

No. 172 of 1872.—The Medical Fund Annuities of July 1872 are granted as follows :—

To retired Surgeon-Major J. Peterkin, M. D., a large Annuity, from 1st July 1872, or from date of payment of minimum.

To Surgeon-Major H. T. W. Harper, a large Annuity, from the date of payment of minimum, or from the date of retirement from the service, whichever may be the latest, provided both events take place on or before the 31st August 1872.

Dooly Bearers.

12th July 1872.

No. 176 of 1872.—The following is to be substituted for para. 9 of G. O. G. 14th March 1854, No. 59.

9. Whilst in camp, or marching, dooly bearers attached to hospitals will, when not otherwise employed, attend on the sick, provide them with water and give any little aid required. At stations their services will be available in hospitals, for pulling punkahs, removing weeds, dusting furniture, and cleaning windows.

Uncovenanted Servants—Appointments.

20th July 1872.

No. 186 of 1872.—The following General Orders by the Government of India, are re-published :—

No. 726 of 1872.—The following notification, issued by the Financial Department, No. 2620, dated the 10th August 1871, is published for general information :—

No. 2620.—The Governor-General in Council is pleased to rule that no person shall be appointed to the public service in India in a grade eligible to pension without a certificate by a commissioned medical officer, or by a medical officer in charge of a civil station, that he has no disease, constitutional affection, or bodily infirmity, unfitting him, or likely to unfit him, for the public service.

2. The provisions of the above notification are applicable to uncovenanted servants of Government under the Military Department.

(General Orders by the Commander-in-Chief.)

Passage—Medical Department Sub.

No. 51.

2nd July 1872.

The following extract from a letter, No. 255, dated 6th February 1872, from the Government of India in the Military Department, to the Quarter-master General, relating to the grant of free passages by sea or river for the families of

Hospital Assistants, when proceeding to join their appointments, is published for general information and guidance :—

" There is no rule which sanctions a free passage by river or sea to the families of Hospital Assistants, neither does the Governor-General in Council consider it expedient to concede the point.

" But in certain cases when, as in the case of the Eastern Bengal Railway for instance, the steamer passage forms part of the railway journey, that is, when the steamer is connected with the Railway Company, and the through journey forms one fare, the whole journey may be allowed free to the families of Hospital Assistants."

Clothing.

No. 54.

An instance having occurred in which certain articles of clothing belonging to attendants on glandered horses were *destroyed* as a precautionary measure, to prevent the spread of infection, His Excellency the Commander-in-Chief, under instructions from Government, desires, to intimate that no necessity whatever exists for the destruction of clothing used on such occasions; it being quite sufficient to subject such articles to the boiling process directed* by the Government of India in the case of small-pox and cholera-infected clothing.

(*a*) *G. O. 17th May 1865.

This course is in future to be followed by Officers Commanding batteries of Artillery and regiments of Cavalry.

Passage—Troopships.

No. 57.

Under the authority of Government the Commander-in-Chief is pleased to notify, for guidance, the procedure to be observed in the case of officers entitled to a free passage to England overland, who may arrive at Bombay shortly before the commencement of the trooping season.

(*a*) Vide Madras G. O. C. C., page 215 of 16th December 1865.

2. Officers so entitled, whose leave commences *from and after the 1st September of each year*, are to reach Bombay within the time allowed to officers preparatory to embarkation, and are to be embarked on, or be detained for, the first troopship leaving after their arrival, instead of being provided with passages in the Peninsular and Oriental or other Companies' steamers.

3. In the case of officers who may be ordered to England on medical certificate during the trooping season, local military authorities are directed on each occasion an officer passes a station medical board to give immediate intimation to the Quarter-master General at Bombay.

Passage—Transport—Railways.

No. 60.

Repeated instances having occurred in which railway warrants have been granted without specifying the nature of the duty on which officers were proceeding, the Right Honourable the Commander-in-Chief, in requiring strictest adherence to G. O. C. C., dated 27th June 1872, and Clause II. of para. 134, "Transport Regulations, Part II." directs the special attention of Staff Officers to an omission of information required by regulation, and productive of much unnecessary inconvenience and delay in the auditing of accounts.

Leave—Officers.

No. 65.

In modification of the Regulations marginally noted, the Commander-in-Chief is pleased to direct the discontinuance in future of duplicate papers hitherto submitted with furlough applications of officers of the Indian Army. * * *

* G. O. 135 of 1870.

These documents are now required only in original, except the *statement of service* accompanying furlough applications, which must still be sent in duplicate.

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* Madras G. O. C. C. 2nd August 1870, page 236.

Neilgherries.

8th July 1872.

As much inconvenience has occasionally arisen from a neglect of the instructions laid down in para. 307, Army Regulations, the Commander-in-Chief directs the attention of all officers visiting the Neilgherries to that order, which s again re-published.

Para. 307.—Officers proceeding to the Neilgherry Hills on leave, are to report in writing their arrival, place of residence, and intended departure, to the Assistant Adjutant-General, Mysore Division, and to the Staff Officer of the Depôt at Wellington.

MADRAS MEDICAL FUND.

Retirement.

Surgeon J. Macdonald, from 1st August 1872.

FORT ST. GEORGE,
30th July 1872.

List of Children.

On account of whom Payments have been notified by the receipt of Paymaster's Statements, &c., from 29th June up to this date for securing the following rates of pensions.

Names of Subscribers.	Children's date of birth.	Sex.	Rates of Pension secured.	To what period.	Payments how made.
S. T. Heard ...	21st March 1872...	Female...	Half ...	To 21 years ...	By Donation.
A. Sanderson ...	18th May 1872 ...	Do. ...	Do. ...	To D. or M., &c. ...	
T. Pritchard ...	11th August 1867.	Do. ...	*Do. ...	To 21 years ...	
Do. ...	Do. ...	Do. ...	Full ...	*From 21 to D. or M. &c.	
Do. ...	24th October 1869.	Male ...	*Half ...	To 18 years ...	
Do. ...	Do. ...	Do. ...	Full ...	*From 18 to 21 years...	
G. Marr ...	14th April 1872 ...	Do. ...	Do. ...	To 21 years ...	
Do. ..	13th Dec. 1870 ...	Female...	*Half ...	Do. ...	
Do. ...	Do. ...	Do. ...	Full ...	*From 21 to D. or M. &c.	

N. B.—The rates of Pensions marked thus * are additional to those previously secured.

MEDICAL FUND OFFICE,
FORT ST. GEORGE,
30th July 1872.

List of Wife

On account of whom Payments have been notified by the receipt of Paymaster's Statements, &c., from 29th June up to this date for securing the following rate of Pension.

Name of Subscriber.	Date of Marriage.	Rate of Pension secured.	Payments how made.
F. Day ...	13th April 1872.	Full ...	By Donation.

MEDICAL FUND OFFICE,
FORT ST. GEORGE,
30*th July* 1872.

CORRESPONDENCE.

WATER ANALYSES.

To the Editor of the Chemical News.

SIR,—In your paper of the 15th March I notice a letter from Assistant-Surgeon Nicholson, in which he states that the analyses which have been made during the past four years of the waters of military cantonments in Bengal were made upon a method drawn up in neglect of the peculiarities of Indian waters, and that, in consequence, the results were in most cases erroneous, and, from a chemical point of view, worthless. I might simply meet this assertion by another, namely, that the method which was employed was directed, so far as needful, to the case of Indian waters, and that as, when I drew up the scheme, I had been engaged in analysing Indian waters for over fifteen years, I knew very well what those peculiarities are. I might also add that the reports of the analysts who used this method, which have been included in my reports to the Government of India on the subject of the analysis of potable waters, have gained the marked approval of the Army Sanitary Commission, as well as of Dr. Parkes and Dr. Angus Smith.

The peculiarities to which Dr. Nicholson specially refers are the frequent presence in Indian waters of a large quantity of nitrates in a sample which is free from organic matter, and *per contra* of water contaminated with sewage containing little or no nitric acid. These, however, are facts which have been not only recognised by me, and by analysts who have worked under my guidance, but also by Dr. Angus Smith, who, in a pamphlet which he wrote upon the subject,—one by the way, to which I was much indebted in drawing up a scheme for use in Bengal,—drew attention to these very points, and urged their consideration upon those engaged in water analysis. I should hope that no one would think of condemning a water simply because it contained a large quantity of nitrates or of chlorides, though he would do well to remember that, under some circumstances, if positive, the presence of either in any quantity would be a warning not to be despised.

I willingly allow that the scheme of analysis of potable waters which I drew up six years ago, for the use of our water analysts, needs great modifications; but these have been introduced in the revised scheme which, in communication with Dr. Angus Smith and Dr. Parkes, I compiled under instructions from the India Office, when I was lately on furlough. This more recent scheme includes the admirable methods of water analysis introduced by Messrs. Wanklyn and Chapman. I may, however, say that the old scheme was very much modified by me in communication with the individual analysts, and in particular Messrs. Wanklyn and Chapman's processes were introduced so far back as 1868.

While carrying out the analysis of the potable waters of Bengal and adjacent Presidencies, I had to bear in mind that our analysts were not for the most part trained chemists; and, therefore, to have asked from them complete analyses of the mineral constituents of water would have been, for more reasons than one, a very unwise proceeding. Nor do I think that such analyses are generally needful; and I may conclude by saying that if I were now instructed by Government to do over again the work lately done in Bengal, I should feel much inclined to put into the hands of the analysts Messrs. Wanklyn and Chapman's work on water analysis, with instructions to work by it, supplementing the chemical with a microscopical examination of the waters, and charging them, as I have always done, to bear in mind that by no method of analysis can we with certainty detect all

dangerous matters in a water, while, however, we may with certainty exclude danger by strict attention to the sanitary condition of the water source.

I am, &c.,

F. N. MACNAMARA, M.D.

Water-Analysis.

To the Editor of the Madras Medical Journal.

Sir,—If Mr. Nicholson will kindly refer to my reply, he will discover that I did not, as he implies in his letter of the 15th June, say that sulphate of sodium can be WHOLLY converted into chloride by ignition with twice its weight of chloride of ammonium. I simply stated that if the two salts be ignited together in the proportions I have mentioned, abundance of chloride of sodium will be found in the residue; had I meant that the conversion would be a complete one, I should have said so. Mr. Nicholson had stated that any one could convince himself by a simple experiment of the inaccuracy of the scheme on this point, and my wish, therefore, was to indicate an experiment, which could be readily made, and which would convince any one making it, that pure chloride of ammonium ignited with pure sulphate of sodium, does produce chloride of sodium.

One word more—your correspondent "Glycogen" in your May number speaks of me as having been employed for years in nothing but Indian water analysis, so let me say that water analysis constitutes but a very small part of my duties. As Chemical Referee to Government (for the past nineteen years) in all its Departments for this part of India, it would be strange if my laboratory work were not of a most varied character.

Calcutta, *July* 1872.

I am, &c.,

F. N. MACNAMARA, M.D.

Hydrophobia.

To the Editor of the Madras Medical Journal.

Sir,—I shall be highly obliged by your kindly inserting this letter in your well esteemed paper for general information.

We have been labouring long to enlighten the hypothetical demonstration on Hydrophobia in one of our vernacular medical paper, but the acquirement of the native doctors by whom the above paper is chiefly patronized, are, we are convinced, not at par to apply their intellect to pervade over the clue of our queries. We shall, therefore, thank your readers to throw some light by explaining the following questions.

What is the true nature of Hydrophobia? How does it produce *de novo?* What structures of the animal body are principally affected by the poison, and how? Why and how spasms of the muscles of the deglutition and respiration are brought on at the contact or even the sight of water? Does the poison of Hydrophobia exist only in saliva or any other fluid or solids of the rabid animal? If it only exists in saliva, what changes occur in the salivary glands? Do the properties and chemical composition of the salivary fluid suffer any change, if so, what are they? Can the poison of Hydrophobia be extracted from the salivary fluid, and will it act in the same manner if taken by the mouth as when bitten by a rabid animal?

I am, &c.,

S. BAHADOOR ALLY,

Native Doctor.

RAEPUR, C. P.,
22*nd July* 1872.

TO CORRESPONDENTS.

MR. STAGGS—MR. NICHOLSON—MR. JUDGE—*In our next.*
DR. SHORTT—MR. EATE—*Received with thanks.*

BOOKS, &c., RECEIVED.

Journal des Connaissances Médicales; *May* 30*th*, *June* 15*th*,
Medical Record; *April* 1*st*, 15*th*, *May* 1*st*. [30*th*.
Gazette Médicale d'Orient; *April and May.*
Bangalore Spectator; *July* 10*th*.

Medical Press and Circular; *June.*
Doctor; *June.*
Dublin Journal; *May, June.*
* Do. ; *Feb. March.*
* Edinburgh Medical Journal; *Feb. to May.*
* Lancet; 1871 (*except May 20th, July 22nd, Sept. 9th, Oct. 28th, Nov. 4th, 18th, 25th, Dec. 23rd*); *Jan. 6th to May 25th,* 1872.
* British Medical Journal; January 1*st,* 1870; *Feb.* 17*th* to *May* 25*th,* 1872.
* Pharmaceutical Journal; *Feb.* 3*rd* to *May* 25*th.*

The Secretaries Royal Medical Benevolent Fund Society of Ireland, *acknowledge with many thanks receipt of the following Donation.*

G. W. Walter, Esq. ... ... Rs. 25

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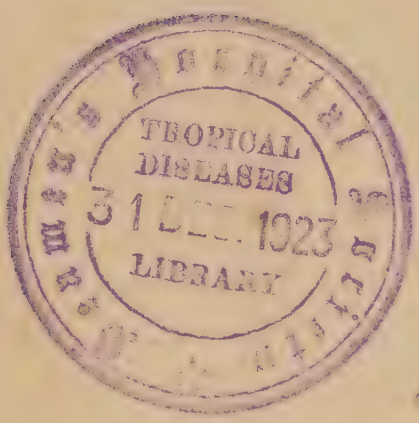
* *Through Mr. R. Hardwicke.*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THE MADRAS
MONTHLY JOURNAL
OF
MEDICAL SCIENCE.

No. XXXIII.—SEPTEMBER, 1872.

ORIGINAL ESSAYS.

ART. XI.—*Report of the Medical Committee appointed to investigate the causes of the Epidemic Fever which has prevailed in the Provinces of Coimbatore, Dindigul, Madura and Tinnevelly, during the years* 1809, 1810, *and* 1811.

(Continued from page 121.*)*

SECTION SECOND.

The Climate that has been experienced in these Provinces since November 1808 *up to the present period, contrasted with that above mentioned, with its effects on the cultivation of the soil.*

We shall now proceed to say something of the climate that has prevailed in the districts in which the fever has raged for three years past; by comparing which with that of common years we shall find in the result that irregularity of season and that unnatural state of the atmosphere at certain periods which we conceive to have been the great general cause of all those ills which have occurred.

The years 1804, 1805, 1806 and 1807 were remarkable all over the Coimbatore, Dindigul, Madura and Tinnevelly districts for their dryness; but they were very healthy. In 1808 a great deal more rain fell in the three first mentioned districts than there had done for several seasons before; but in the Tinnevelly province the monsoon of that year was unusually heavy and was succeeded by a more than common cold wind in January and February 1809.

The monsoon of 1809 was of more than usual severity, but less so in Tinnevelly than in the northern tracts of our prescribed range. It began very early and at first mildly in the Coimbatore, Dindigul and Madura districts, that is to say, little rain fell in those countries early in November: but, when the month was more advanced, and in December, the fall for several days was heavy and incessant, and the Cavery and Vyaar rose to a prodigious height; particularly the first, which overflowed its banks to a greater extent than it had ever been known to do by the oldest inhabitants of Trichinopoly.

January and February 1810 in Madura and Dindigul were pleasant months and the air in the former cold and bracing, but in Tinnevelly it proved neither. In the northern districts of our range there were occasional showers about the end of March, in April and at the beginning of May, with their usual attendants at this season, clouds of dust, thunder and whirl-winds; but the southerly winds were much weaker than usual and must on that account have but partially ventilated many tracts situated amongst the hills as well as others which border on them. No rain fell in Tinnevelly till late in May, when the south-west monsoon burst over the Western Ghauts, but not with more violence than common.

The west wind in 1810 was observed, in the northern districts as well as in Tinnevelly, not only to be less strong than usual but in place of continuing to blow fresh till the end of August or beginning of September it lulled early in July. Heavy rain fell in August and September; October and November were excessively close and sultry. Late in the latter month the north-east monsoon commenced in the Dindigul and Madura countries and poured over them absolute floods, bursting their tanks and laying all the low lands under water. Torrents rushed down the sides of the mountains in the first mentioned district, with such violence that several hamlets were swept away in the Toddy-

comboo division. The Vyaar river at Madura was impassable even by elephants for many days and flooded the country east of that capital for miles.

" The great tank at Ramnad, in which this river terminates " its course and which usually is not filled for seven years " together, burst its banks and ran into the sea. Reservoirs " of water that had been dry cultivated or pasture fields have " since those unusual rains contained more or less water and " the ditch surrounding the Fort of Madura particularly, " which for years had been dry, has been constantly kept full " of water. The level of the water in the wells within the " Fort, which in 1806 had been 20 feet from the surface, " has risen at times to within 3 feet of it."*

In the Tinnevelly district the rainy influence of the north-east monsoon, which we have observed in common years not to be so considerable as in those situations lying further north, was this season severely felt. The rains began late and at first were trifling in quantity, but on the 5th of December they commenced falling in torrents, and continued so to do till the evening of the 8th, when the Sytaar and Tambarapoornie came down in vast and sweeping floods, destroying several villages,† causing the loss of many lives, carrying away hundreds of sheep and cattle, overflowing the country for miles and rendering insular the habitations of most of the Europeans belonging to the stations of Palamcottah and Tinnevelly.

The same rains brought a great accession‡ of water into the salt marshes, which was kept up by the subsequent floods falling out of season in February, March and April. The consequence was, that in place of the vapours from these swamps being quickly exhaled by the dry weather which usually ensues after the monsoon, they continued for a period of nearly four months, and to a season when they could not fail of proving most injurious by being converted by the superagency of a close and sultry heat from a simple saline exhalation into putrid, salt-marsh miasmata: the fatal effects of which have been but too severely felt, as may be

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* See the paper of the 3rd Member of this Committee which has lately been laid before Government by the Medical Board.

† And a still greater number of huts, particularly those of Toddy people, in the talook of Calcaud.

‡ To such an extent did the water then rise in some parts that it reached half way up the Palmyra trees.

seen by referring to the account of the deaths in the talook of Punjmahal.*

The inundation in December 1810 did not produce, as might have been expected, that cold state of the atmosphere which usually follows the north-east monsoon rains—a singularity which was not confined to Tinnevelly, but also distinguished this season in Madura, Dindigul and Coimbatore, in which provinces the months of January and February were remarkable for a very faint north wind and a hot and clear sun-shine. February, March and April, which in proper seasons are proverbially dry on the Coromandel Coast, this year exhibited all over the southern territories a rare, unnatural and extraordinary variation of heavy† *rains*,accompanied by the still more uncommon phenomena of an occasional north-east wind and much thunder and lightning.

In speaking of the climate of these provinces in regular seasons we observed that during the months of March, April and part of May strong ventilating and scorching winds prevail ; but such was not the case in 1811. On the contrary, the southerly wind was languid and wavering, the most distressing lulls were frequent, quickly alternating with sudden gusts of bleak air and accompanied with heavy showers from the north or north east. But if this feeble state of the southerly wind was so conspicuous in the open country, what must it have been in situations near to, or altogether amongst the mountains where, at this season, a dry ventilation is essentially necessary ? What was peculiarly observable in the state of the atmosphere at this time (the period too at which the epidemic raged with the greatest‡ *violence*) was a certain denseness in it, sometimes almost creating a difficulty of breathing, a feeling we had occasion to experience about the middle of April at Dindigul ; and we learn from Mr. Hepburn that at Tinnevelly it was equally remarkable and as distressing. There was besides during

* See No. 5, a paper which accompanies this report.

† These rains, truly called unseasonable, began early in February and continued more or less during the greater part of it. About the beginning of March they fell very heavily for days together and were frequent during the rest of the month. In April there was much rain and the sun was generally obscured by clouds. May was drier, though by no means so much so as in common seasons.

‡ From every account we have received it appears that the most unhealthy period in all the four districts was from towards the end of February to the beginning of May 1811.

these months a singular oppressive, hot and steamy vapour, which rose from the ground and which gave a sensation not unlike what is occasionally experienced from a crowded assemblage of people in hot weather. Added to all this, the dews, which in common seasons are pretty well over by the middle of March, continued to fall heavily so late as the 19th and 20th of May and could not fail, by chilling the body after the relaxation of a hot night, to prove productive of infinite mischief.

The west wind did not begin to blow so early as usual this season and was by no means so strong as it commonly is, through the whole extent of the four districts. After having commenced it ceased again for several days, towards the end of May, giving place to gentle airs from the east and south-east in June; and early in July it was everywhere observed not to be so powerful as usual, and in the Streevulputtore Talook of the Tinnevelly district there were great complaints of its inefficacy; though it has since blown with greater force and now (the end of August) the climate not only appears to be nearly what it ought to be, with regard to winds,* but to have in a great measure gratified the hopes and expectations of thousands, by changing the constitution of the atmosphere and almost entirely banishing the epidemic fever.

From the account which we have thus given of the climate of Coimbatore, Dindigul, Madura and Tinnevelly for the last three years, it will readily be allowed that the different seasons during that period have varied much from their common course. Inordinate rains have succeeded to uncommon drought; the north-east wind and land-wind have been weak as well as of undue duration; the most distressing lulls have alternated with sudden and chill blasts from various directions; and last of all, and what appears to have brought the mischief to a crisis, heavy rain and close sultry weather have taken place at those times which are usually distinguished by dryness and by those ventilating breezes which exhale the superfluous water from low and marshy

* From a due degree of strength in the drying and purifying west wind we ever conceived that much benefit was to be looked for. In the Carnatic, where such winds are always dry, epidemic fevers are not known, as was noticed by Dr. Lind many years ago. Zimmerman in his "Experience" dwells much on the advantages often derived from strong winds by purifying the air from noxious vapours. See his Experience, Vol. 2nd, page 154. English translation.

situations and dispel the dews and vapours which never fail to occur after the ceasing of the north-east monsoon. Thus there has been constituted an extraordinary and unnatural state of the atmosphere, everywhere unsalutary in the tracts in which it was produced, or into which the distempered miasmata may have been carried by particular currents of air.

The stagnation, vegetable putrefaction, dampness, filth and offensive effluvia, the natural consequences of what we have just stated, have proved evils of no small consideration, particularly in low or ill-ventilated situations.

The 2nd Member of this Committee in travelling from Darampooram to Dindigul in the beginning of June, and on passing along the banks of several marshy tanks, as well on the western frontiers of the first mentioned district as in the Toddycomboo talook of the second, was assailed by a noxious and sickening exhalation which somewhat resembled bilge water. And the President and 3rd Member experienced exactly the same effect from similar causes towards the end of the same month in passing from Towerincourchie to Cottampetty in Madura province; and again for several miles on the road leading through and on the north side of the large and beautiful town of Streevulputtore in Tinnevelly country.

It can easily be supposed that a continuance of unseasonable weather for several years together must, with other bad consequences, have proved injurious to the cultivation of the soil. In Coimbatore, however, which is chiefly a dry-grain country, in which superfluous water is quickly carried off into rivers and nullahs, this has not been conspicuous; and by Mr. Garrow's return it does not appear that any particular sickness has prevailed amongst the cattle of that district.

With regard to the Dindigul country, we had occasion, while there, to observe in the month of April last that so general was the sickness and so great had been the mortality that the Sumbah crop of paddy was actually in some places rotting on the ground from a want of hands to cut it down. And Mr. Peter informs us that many thousands of cattle have died in the different divisions under his management since the time that the epidemic first commenced, as much, we are inclined to think, in consequence of the unnatural state of the air as from a scarcity of hands to feed and take care of them.

In Tinnevelly, we understand from Mr. Hepburn, that not

less than 44,273 cattle have died in his Collectorate since the beginning of February last ; not so much from any particular disease as from an excess of moisture in the air and a want of people to take care of them. Mr. H. has further informed us that the great Peshanum Sumbah crop, which is gathered in February and March, was got in in a much less perfect state than usual, from its being so frequently wetted and from the inhabitants being obliged to cut it down before it was quite ripe, owing to the dread they entertained that, if they allowed it to stand longer, they would lose a great part of it from the violence of the rains. Such stunted and immature grain, when stocked, was apt partially to ferment and get heated, which rendered it a much less wholesome food than if it had been cured in a better condition ; and he has also said, that so general has this calamity proved in the Tinnevelly district that the greatest difficulty has been experienced in procuring the small quantity of grain required for seed for the cultivation of the present year. The dry grains from the same cause have also suffered much, and must in consequence have been rendered less nutritious.

Having deemed it proper at this part of our Report to notice the circumstance of the crops of these countries having suffered much from unseasonable rains and that the quality of the edible products had been thereby injured, we must here observe that though the necessity thus induced of eating a somewhat less wholesome grain than usual cannot be considered otherwise than as a great misfortune, yet it can form no part of the original cause of the epidemic fever which had commenced at a period antecedent to the failure of the harvest, though it certainly may by inducing debility have contributed much to augment the fatal nature of the disease.

SECTION THIRD.

Rise, progress and direction of the Epidemic in the different districts. Numbers that have died of the disease within certain periods, compared in some instances with those in common years. At what time the Fever appears to have raged with the greatest violence.

When it is considered that one great cause has chiefly prevailed in producing a distempered constitution of the at-

mosphere in the southern provinces of the Indian peninsula, we are much inclined to think that, although in some of these countries the effects may at first have been but trifling (and therefore little noticed), they must all have suffered in a greater or less degree nearly about the same time ; with this difference, that such tracts as from their situation or peculiar nature were most fitted for nourishing or increasing the operation of the evil would, of course, feel its influence to a greater extent.

After several years of unusual drought, we observed that heavy monsoons and irregularity of climate became conspicuous in 1808, and have continued to be so up to the present period ; and it is from the commencement of this deviation from natural order that we can trace the earliest approaches of that sickness which has since proved so fatal.

The first public notice we have of the epidemic fever (except Dr. Christy's official communication to the Superintending Surgeon of the Southern division in 1808) is that of Mr. Garrow, in a letter to the Revenue Board, of date the 25th of October 1809, about which time he speaks of its having severely raged in his Collectorate in the Chuckragherry taluq, at places called Columbum, Cullapuram and Comaralingum, and which, he adds, are close to the hills, marshy and proverbially unhealthy. It soon after extended to many other villages in a northerly direction, thence eastward to others in the vicinity of Darampuram, and in October last it had made its way still farther towards the north. But by Mr. Garrow's account it received a check in January 1811, not however before it had committed great havoc, especially from the months of January 1810 to June of the same year, during which period 8,924 persons died in the Coimbatore division only.

The favourable hopes that were entertained at the beginning of the year 1811, we are sorry to say, were but too soon blasted, for after the untimely rains in February the disease recommenced its work of destruction with great severity and spread not only amongst those villages, the most liable from their low sites to be visited by such maladies, but to others standing much farther east, high, dry, and, in common seasons, healthy.

Mr. Garrow has informed the Committee that the almost universal opinion in Coimbatore is, that the epidemic fever first entered that district from the direction of the Pylny mountains and, according to his own observation of the

malady, its course has been from south to north, inclining towards the east, and from the hills near to which it first shewed itself, after the most unseasonable of all the irregular weather we have mentioned ;—we mean that occasioned by the falling of heavy rains and dews in February, March and April.

Although the statement we have of deaths from the Collector of the Dindigul district does not extend farther back than to the 1st April 1810, yet we are well aware that the epidemic had been prevalent there before that time. By information received on the spot, we know that many had sunk under it at a period antecedent to that above mentioned, especially in the sequestered zemindaries of Neelacotta and Sundyhoor, and in the Toddycomboo division.

There is in this province also a general belief that the Pylny mountains gave birth to the evil ; it certainly evinced the same peculiarity here that we observed in Coimbatore, viz., that it was first noticed in low situations near the hills, and afterwards, as the general cause extended, its baneful influence spread to tracts naturally drier and more healthy.

We see by Dr. Christy's paper that a fever prevailed in certain parts of the Madura district as early as 1809, and more or less in the fort itself about the same period. It would seem at that time, however, to have been chiefly confined to the poor who occupied the lowest huts and seldom attacked the better sort of people who lived in elevated houses of brick and stone and slept on couches, nor were many Europeans that year affected by it.

In 1810 the disease became more general and alarming than in the former season, as well in the city of Madura as at other places of the provinces. It now neither spared Europeans nor the more wealthy inhabitants and proved fatal in many instances. But, as in the other territories we have mentioned, the months of February, March and April 1811 appear to have been by far the most calamitous era, no doubt from the causes we have already assigned.

In this district, like the others within our range, the Pylney mountains are considered by the native inhabitants as the great cause of all their misfortunes ; but here we find an extension of the epidemic, not as in Coimbatore from south to north, but from north to south. Here it has also been invariably remarked that it was in low situations close to the hills, such as at Towerincourchie and Sholavandum, that

the fever first attracted notice, and that the rains and close weather in February, March and April had the unhappy effect of diffusing the morbific miasmata over tracts farther east than they had before reached and comparatively high and dry. Divisions, however, nearer to the sea, or rather farther from the range of mountains in this Collectorate (such as those of Shevagunga and Ramnad*), have nearly escaped the disease altogether, as was witnessed by the 2nd and 3rd Members of this Committee during an excursion they lately made through that zemindary.

The Collectorate of Tinnevelly seemed for a time as if kind Providence had averted from it the mischief which was destroying so many thousands in countries lying but a short distance from it; but it soon appeared that the evil was only retarded. It is true that in the months of March, April and May 1810, as we are informed by Mr. Hepburn, fever had attracted a little notice in the northern and western parts of the district. It was, however, trifling and but of short duration and no more was heard of it till the month of February† 1811, when it shewed itself very generally in the talook of Strevulputtore (which is contiguous to the Madura province) and in Tencoushie, both of which lie near the mountains. Soon after this it broke out in the vicinity of the sea and salt marshes, and committed great ravages in the Punjamahal‡ and Calcaud § talooks; and lastly, it extended itself from Tencoushie to the more southern tracts (including the Pollams) and kept on its course all the way to the sea; but invariably proving most destructive in those villages situated nearest to the hills.

From the above account there will be observed this singularity, that in the neighbourhood of the salt marshes the disease made its appearance at a period prior to that at which it first began in places lying betwixt them and

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* Kilearry and its neighbourhood must here be excepted, where, from the vicinity of a salt marsh, the fever has been prevalent for some months past.

† It was at this period that many pilgrims returned from a feast at Pylny where the fever then was and had been for many months. These pilgrims had left their own villages about the end of January 1811, at which time there was no fever in them. Shortly after they had come back to their own homes, however, they were all seized with fever and we are sorry to add that scarcely one of them is now living.

‡ This talook stretches from Shengulotum to the southern extremity of the peninsula.

§ This stretches from Trichindore to Manapar along the seaside; twelve villages in it have suffered dreadfully.

Tencoushie—a circumstance which leads us to conclude that, in these briny swamps of the Tinnevelly district, a separate source of the disease is to be looked for from that which occasioned the sufferings of those inhabiting the more northern divisions of the same Province.

The malady, on its way south from Tencoushie, would appear to have got first into the Brumadashum* talook in an alarming degree about the beginning of March, especially in the village of Veeramasingaporum (near the Papanossum cataract), in which so great a mortality soon ensued that it was with difficulty hands sufficient could be procured to bury the dead. In Shermadavy the epidemic was felt somewhat later (not before the beginning of April), and then, though numbers died of it, neither was nor has since been so severe as in some other divisions, owing perhaps to its having the Polygar countries betwixt it and the western mountains.

In Nelleumbalum, in which talook the city of Tinnevelly stands, the disease, if the city itself is excepted, did not commence so early as in situations nearer to the hills. In the month of April, however, it appears to have been very prevalent, as most of the inhabitants were then sick and many died, particularly in the town of Caddium. In the talooks of Vedoogramum, Stryvygoonthum, Gaingoondum and Alvartinnevelly, the disease has been much less destructive than in other parts of this province, although in them there has also been a greater degree of sickness than in common years; and this peculiarity in their favor we can only account for from their lying at a considerable distance from the great ghauts and from their standing higher above the level of the sea; to which causes also is, in a great measure, to be ascribed the comparative healthiness of Shenkernacoil, which extends to the hills only at one corner, being at other points separated from them by the Pollams of Shevagherry and Chokumpetty.

From what we have said of the rise and progress of the malady in the province of Tinnevelly, it will be concluded that the general direction of the morbific influence has been here opposite to what it was in Coimbatore (which was from south to north and a little east), and that it corresponds with that which it took in the Madura district, which was from north to south. We have moreover ob-

* Most of the villages in it lie near the hills and are surrounded by much low and marshy ground.

served that the closer to the hills the more certain was the danger and that in some tracts in the vicinity of the salt marshes, along the sea-side, there appears to have been altogether a separate spring of epidemic malignity.

With regard to the two opposite directions in which the distempered exhalations seem to have extended themselves in different parts of the peninsula and the cause or causes of this varying course, we confess that we give our sentiments with great hesitation, as the subject not only involves in itself considerable difficulty but naturally leads to some yet undecided points and to the theories and opinions of certain ingenious men respecting the propagation and diffusion of miasmata and contagion.

We have repeatedly noticed that great irregularity of seasons had taken place throughout the whole of the Southern provinces and it is certainly allowable from a universal cause to look for a general result, but while the same description of universal climate may have prevailed in all those territories, yet the lands themselves may have had localities or peculiarities of such a nature, as, although under one common influence, to have proved productive of effects differing much in degree. Thus it is that a long continued unnatural state of the air, operating upon the close and overgrown woods of the Pylny mountains, upon their unventilated vallies and stagnant marshes, could not fail to engender a more rapid and dangerous mal-influence than the operation of the same seasons on the drier and less jungly plains of the eastern ranges of the peninsula. In the same manner and for the same reason, the changed constitution of the atmosphere has been creative of ill effects in the vicinity of the salt marshes of the Tinnevelly country, differing much in extent from those experienced in other estates which, though at no great distance from them, are otherwise circumstanced with respect to nature and situation.

The fever which has occasioned so great a mortality on the Coromandel Coast was first purely endemic and, in all probability, had the irregularity of seasons been of short duration, it would not have been heard of beyond the sources from which it sprang, although we find, and that from high authorities*, that even the causes of endemic fever are some-

* See Dr. Jackson's remarks on the Constitution of the Medical Department of the British Army, page 212. See also Zimmerman's Experience, Vol. 2nd, page 155, English translation.

times carried by particular currents of wind to a considerable distance; but on the disease having been rendered epidemic by the same means* which bring about this change in every quarter of the world, its nature as usual became in some respects altered. "Fevers of this sort," (says Dr. Jackson) "arise in particular countries or districts of "a country; they travel in certain tracts, sometimes con- "fined to narrow bounds, at other times they are more "widely diffused."

We have seen this epidemic of India spreading its poisonous breath from south to north and a little east in Coimbatore province, as much perhaps in consequence of the extension of moisture combined with heat, as it may have been assisted on its course, from what the natives suppose to be the grand endemic source (the Pylny mountains) by the south-west winds in the months of March, April and May. In the Dindigul territory this mischief, if carried by the winds, had not far to travel from the same unwholesome spring. Independent of which, however, the Dindigul district had *in itself* other localities extremely likely from their nature to have generated endemic fever; such as the low Toddycomboo division, the valley and that singular mountainous amphitheatre which surrounds Towerincourchie and its marshy neighbourhood.

The garrison of Madura and other places situated nearer to the hills in this district become absolute hot beds for fever in the seasons we have had occasion to lament, and must, if the notion be just that the morbific miasmata can be conveyed from place to place by particular currents of air, have been of extent sufficient to have affected the whole province.

Tinnevelly, we have seen, did not suffer much before the heavy rains in 1811 and at that time there are two ways in which we may suppose the evil to have been produced, viz., either as originating and spreading from endemic sources within the district itself, or as it may have been conveyed hither by the north-east monsoon winds which still prevail in the month of February, and perhaps both of these may have had their share in bringing about the general

* Hoffman tells us that intermittent fevers are most common in autumn and spring, and that they are endemic in low marshy situations; but that, when rainy, variable seasons succeeded hot summers, they frequently become *epidemic*.—Vide Medical Rat. Syst. Part I. Cap. I.

calamity,* though we confess we are inclined to think that if the extension of the disease was as much occasioned by miasmata being carried by the breeze as it is dependent on a peculiar and general state of the air, we should occasionally see it spread itself wide of those tracts it has invariably been observed to pursue and which are ever found to be those nearest to, and in the direction of, the great endemic sources.

We regret that the account of deaths which we have received from the different Collectors are not all for equal periods, nor made out according to one prescribed form; circumstances which will prevent us from rendering such exact comparative statements as we otherwise should have had it in our power to have done. We trust, however, that they will not be unsatisfactory, as they will shew the varied extent of the calamity in the different districts. The return† of deaths transmitted to us by Mr. Garrow for the Coimbatore Collectorate is for sixteen months, that is, from the 1st of January 1810 to the 30th April 1811, during which time there died in the different talooks (twelve in number) 12,458 males and 9,993 females, making a total of 22,451. The population‡ of the Collectorate in Fusly 1219 amounted to 596,606, so that on the whole population we may reckon that in the sixteen months there have died about $3\frac{3}{4}$ per cent.

To shew the centage of deaths in the different talooks of this province, compared with their varying population, we have constructed the following table, by which it will appear

* However singular the coincidence of the pilgrims having brought the epidemic fever with them on their return to Tinnevelly from Pylny in February 1811, we cannot allow, at all events we deem it not probable, that the malady was in any degree propagated in this district by means of contagion, and Dr. Jackson has told us that no medical fact is better established than that diseases of this nature are not contagious.

† See No. 1, a paper which accompanies this report.

‡ See No. 2, a paper which accompanies this report.

that in the Pillanche and Satimungalum divisions, both contiguous to the mountains, the fever has been the most destructive; the first having lost during the period abovementioned $6\frac{15}{16}$ per cent. of its whole inhabitants, the other $5\frac{1}{16}$ per cent:—

Talooks.	Population.	Deaths.	Per centage.
Coimbatore	83,882	3,558	$4\frac{1}{4}$
Cheroor and Cooroomandoor.	50,413	1·896	$3\frac{3}{4}$
Parindorie	53,193	1,503	$2\frac{13}{16}$
Erroad	32,326	861	$2\frac{5}{8}$
Andoor	44,306	1,955	$4\frac{3}{8}$
Satimangalum	50,326	2,567	$5\frac{1}{16}$
Colingall	44,426	1,712	$3\frac{13}{16}$
Caroor	54,015	1,691	$3\frac{1}{8}$
Darampooram	59,047	1,461	$2\frac{7}{16}$
Pillanche	41,438	2,878	$6\frac{15}{16}$
Chuckragherry	44,478	1,260	$2\frac{13}{16}$
Pullaundum	38,756	1,109	$2\frac{13}{16}$
Total...	596,606	22,451	$3\frac{3}{4}$

The statement* which we have received from Mr. Peter the Acting Collector of Dindigul district, shews the number of people who have died in it during a period of

* See No. 3, a paper which accompanies this report.

twelve months, that is, from the 1st of April 1810 to the 31st of March 1811, contrasted with the deaths which usually happen in the course of a common year.

In the four divisions of Toddycomboo, Iyempilly, Tenkerry and Wootampolam, and in the minor and sequestered Zemindaries, there have died of males and females together within the twelve months 21,510.*

In healthy years the mortality is said to be annually about 3,438, which makes a difference of 18,072. The population of the Divisions and Zemindaries in Fusly 1212 amounted to 295,654, so that in the twelve unhealthy months there has died about 7¼ per cent. of the whole inhabitants. The different divisions of this district have suffered in the following proportions:—

Where 100 men would have died in common years in the sequestered Zemindaries, there have died within the period above stated	832
Do. do. in the minor Zemindaries	733
Do. do. in Wootampolam division	675
Do. do. in Toddycomboo	591
Do. do. in Tenkerry	513
Do. do. in Iyempilly	484

So we find that the sequestered Zemindaries have been the most unhealthy and the division of Iyempilly the least so.

The statement† which we have received from Mr. Peter, the Acting Collector of the Madura district, is also for twelve months up to May 1810, by which it appears that in the seven talooks of Maudakolum, Sholavandum, Teramungalum, Aunyoor, Thoorumboor, Mellore and Nattum there have died, males and females together, 24,626. In a healthy season the number of deaths is said to be about 3,933 annually, which makes the great difference of 20,693. The population of the province in Fusly 1212 amounted to 245,654, so that in sickly months there died about the proportion of 10 per

* The deaths in the thirteen Pollams of this district are not here included as they have not been given to us with confidence, owing to the returns from these countries being not altogether within the control of the Collector. They (the deaths) are *supposed* to have amounted to 12,601 from the 1st of July 1810 to the 31st of March, 1811.

† See No. 4, a paper which accompanies this report.

cent. of the whole inhabitants. The divisions of the Madura district have suffered in the following proportions:—

Where 100 men would have died in common years in the talook of Nellore, there have died in the twelve sickly months.			... ...	... 1,147
Do.	do.	in the talook of	Mandakolum....	... 821$\frac{3}{8}$
Do.	do.	do.	Sholavandum...	... 772$\frac{3}{8}$
Do.	do.	do.	Aunyoor.....	... 601
Do.	do.	do.	Teramungalum.	... 592
Do.	do.	do.	Thoorumboor...	... 507
Do.	do.	do.	Nattum.....	... 486$\frac{5}{16}$

By the statement* delivered to us by Mr. Hepburn, Collector of the Tinnevelly district, it appears that in the eleven divisions of Shermadavy, Nelleumbalum, Vedoogramum, Bramadashum, Tencooshie, Streevulputtore, Shenkernacoil, Stryvygoontum, Calcaud, Alvartinnevelly and Punjmahal, together with twenty-seven Pollams, there died within five months, that is to say from the beginning of February to the 30th of June 1811, of males and females together 38,202. The population as it appeared in Fusly 1211 amounted to 690,696, which gives a centage of deaths in that period of about 5$\frac{1}{2}$.

The following is the centage proportion of deaths in each particular Division, calculated according to the respective population:—

Tencoushie	12 per cent.
Streevulputtore	6$\frac{1}{2}$ do.
Bramadashum	6$\frac{1}{2}$ do.
Calcaud	5$\frac{3}{4}$ do.
Punjmahal	5$\frac{3}{4}$ do.
Nelleumbalum	4$\frac{1}{2}$ do.
Shermadavy	4$\frac{1}{4}$ do.
Vedoogramum	4 do.
Shunkernacoil	3$\frac{1}{2}$ do.
Stryvygoontum	3$\frac{1}{2}$ do.
Alwartinnevelly	3$\frac{3}{4}$ do.

It would therefore appear upon the whole that in the District of Tinnevelly the epidemic fever has raged with the greatest violence, as in the short period of five months 5$\frac{1}{2}$ per cent. of the population have fallen a sacrifice to the disease; but to render our account the more satisfactory,

* See No. 5, a paper which accompanies this report.

we shall add a short table showing, in some measure, the comparative calamity that has befallen the respective provinces :—

	Population.	Deaths.	Centage of Deaths.
Coimbatore for 16 Months...	596,606	22,451	$3\frac{3}{4}$
Madura for 12 Months ...	245,654	24,626	10
Dindigul for 12 Months ..	295,654	21,510	$7\frac{1}{4}$
Tinnevelly for 5 Months ...	690,696	38,202	$5\frac{1}{2}$
Total...	1,828,610	106,789	$5\frac{1}{1}\frac{3}{6}$

SECTION FOURTH.

Causes of the Epidemic, with suggestions respecting the circumstances that may have rendered it peculiarly fatal in particular situations and to certain descriptions of people.

Celsus,* one of the most correct observers amongst the writers of antiquity, has said that those seasons are ever the most salutary which are most uniform, whether hot or cold, and that those which vary much are the sickliest—general principles which, we believe, have never been disputed. We conceive them to have operated powerfully in producing the evils which we have been called on to investigate; and in the Third Section of this paper we have noticed that so justly were they appreciated by Hoffman that he deduced from them his general remote cause of epidemic fever.

The actual state of the atmosphere which engenders this malady no one† has been able hitherto to detect, though

* Vide Celo. Lib. III., Cap. I.

† See Dr. Jackson's Treatise on the Fevers of Jamaica, page 78.

much ingenuity has been displayed on the subject; and we may with safety say that when Sydenham* ascribed such complaints to a "secret constitution of the air," he gave us as satisfactory an account of the matter as any more modern author has since done. But although we cannot positively determine what this "secret constitution" is, we can pretty nearly ascertain under what circumstances it arises.

Dr. Cullen has used the words *marsh miasmata* to express what he conceives to be the remote causes of remitting and intermitting fever; and although the chemical nature of the distempered exhalations has not yet been discovered, owing to the poison being so completely mixed and blended with the air, he expresses a firm belief in the truth of his assumption, from the maladies of the nature in question so constantly prevailing in low and swampy situations. Many such we have taken notice of in the First and Third Sections of our report. This opinion, however, of the cause of fevers of the intermittent kind has been perhaps too implicitly adopted by some modern writers, who seem to think that a state of the atmosphere capable of generating the disorder can only take place in marshy countries, though it is well known that noxious vapours from woods, especially if thick and ill-ventilated, are as certainly a source of the same mischief—a fact which has been mentioned by Dr. Donald Munro,† but more particularly by Dr. S. Farr in his ingenious Preliminary Discourse to his translation, of Hippocrates' History of Epidemics. There he tells us that wild woods in uncultivated countries have been observed to give birth to that peculiar condition of the air which may be the cause of epidemic diseases. Admitting then, which we most readily do, this second source of the malady, we shall not be obliged to look far for it in the southern district, as not only are all the mountains and their intervening vales which form the western boundary of these countries covered with wood, so overgrown as to be in many places almost impervious; but there are in the Dindigul and Madura provinces many other detached hills and valleys between, thickly clothed with jungle and various sorts of rank vegetation, to say nothing of the extensive tracts of underwood so frequently to be met with.

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* See Swan's Sydenham, pages 7 and 8.

† See Dr. Donald Munro's Observations on the Diseases of Soldiers, Vol. II., page 68.

There is still a third origin of morbific miasmata to be found in the Tinnevelly and Ramnad districts, that is, the salt marshes, in the neighbourhood of which we have seen that, in the months of February, March and April last, the fever raged with more than common severity.

Sir John Pringle* has told us that there is a peculiar kind of damp which rises at low water from a beach covered with slime, the more liable to corruption on account of the mixture of salt and fresh water. Dr. Jackson† has, however, disputed the correctness of this opinion. He says indeed that it would be vain to deny that the vicinity of lakes in which there is a mixture of salt water is often unhealthy, yet he affirms with confidence that it is seldom more so than when the lakes are altogether without this admixture; and he adduces proof in support of what he advances. Which of these opinions is correct we know not. In parts adjacent both to the briny swamps near Kilkerry in the Ramnad country and to those in the Punjmahal talook of the Tinnevelly district, the epidemic was particularly destructive; but whether this may have been owing simply to the exhaling influence of the sun upon extensive marshes flooded to a very considerable degree, or in any measure consequent on the salt water they contained, we shall not venture to say.

We have now seen that three great remote causes have been assigned for remittent and intermittent fevers, all of which we conceive have contributed to produce the calamity which has proved so fatal in these fine provinces. But marshy situations do not appear of themselves to be sufficient to render such affections epidemic. To produce this effect there is required the superagency of a close, moist and *sultry*‡ heat and an imperfect§ ventilation: hence it is that, in common years, there is not produced in many of the low situations we have particularized a miasma of sufficient malignity to excite the general disease, because in such cases the exhalation of superfluous moisture takes place during the cold months of December and January when they are comparatively innocent. But rains, falling out of season and in great abundance at periods when the weather had become hot, and when there was so distressing and un-

* See Pringle's Observations on the Diseases of the Army, page 3.

† See Dr. Jackson's Treatise of the Fevers of Jamaica, pages 81-28.

‡ See Dr. John Clark's Observations on the Diseases of Long Voyages, Vol. I., page 157.

§ See Pringle's Observations on the Diseases of the Army, pages 3,4.

natural a deficiency of free ventilation in the atmosphere, occasioned vaporations of a very different nature and which, we conceive, became a positive source of mischief by bringing on that corrupt and stagnant state of the air which is ever closely connected with the decay, decomposition or animation of vegetable matter. Such an offensive condition of the atmosphere we have remarked in our Third Section, was but too often experienced in several of the low tracts of these districts during the sickly season. It was pregnant with most baneful consequences, and strongly recalled to our recollection the following paragraph of a well written paper which may be found in the Medical Repository.*

"The cool refreshing northerly breezes were now exchanged "for oppressive calms or for humid and sultry winds; "such are the changes which the state and temperature of "the atmosphere undergo in the islands of the West Indies "and elsewhere, previous to the breaking out of some mor- "tal epidemic."

Great deviations† from the natural order of climate, we are happy to think, do not very frequently occur in these regions; as in other tropical countries the seasons are pretty regular and steady, and strong winds blowing from fixed points keep the atmosphere in an almost perpetual state of agitation and of consequent purity.‡ We have seen, however, in the melancholy instance before us, that the very reverse of all this has lately happened, and has been judiciously noticed by Mr. Hepburn in a communication§ he made to the Medical Committee. We perceive that a nearly similar departure from the common course of the seasons took place in the Tinnevelly province in the year 1757, as is mentioned by Mr. Orme in his "History of Hindoostan,"¶ and that it was followed by a like calamity. He tells us that in the month of March the south-west monsoon was so violent as to break completely over the Western Ghauts and descend in vast floods into the Coromandel side of the peninsula, where the rains fell without intermission for two days, destroying crops just ready to

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* See Vol. I of the 2nd Hexade, page 145.

† The native Indians also ascribe epidemic distempers to these unusual deviations from natural climate, as we learn from the Ganetamnotum, an astronomical shastrum, to be found in the Library of the Shiva Pagoda of Tencoushie in the Tinnevelly district.

‡ See Zimmerman's Experience, Vol. II., page 145, English translation.

§ See No. 6, a paper which accompanies this Report.

¶ See his History, Vol. 2nd, page 201.

be cut, sweeping away many of the inhabitants, and ultimately (by creating powerful evaporation during a sultry heat) producing an epidemic disease very fatal in its consequences.

With regard to the effects of the miasmata generated amongst woods and jungles, besides the testimonies already adduced, we beg leave to call the attention of the Board to what has been noticed by a very able writer* on the Diseases of the West Indies (Dr. Fowle), who says that in the uncultivated tracts of those countries, where there is much rank vegetation, where the narrow vallies between the mountains, replete with moisture, are often not sufficiently ventilated, there is produced exhalations at any seasons bad, but particularly so after autumnal rains and sultry heats. He moreover adds that mighty torrents, by washing dead matter, animal as well as vegetable, into low swampy lands, where it is left to putrefy, not unfrequently prove the indirect cause of the most pernicious effluvia; and Zimmerman,† who paid much attention to the effects of air upon the human frame, is of opinion that in woody countries much mischief may not only arise from a deficiency of ventilation, but from the noxious qualities of the trees themselves, in support of which he mentions the bad effects well known to be produced by the poisonous exhalation of the Hippomanes at Surinam.

Dr. Trotter in his "Medicina Nautica,"‡ adopting in a great measure the opinions of Priestly, tells us that growing vegetables are found by experience to purify the air; they add oxygen to it by decomposing the water of the atmosphere and the hydrogen goes to the nourishment of the plant. But this process, he adds, only takes place when there is the light and heat of the sun to assist in the operation. If this notion be just, how many thousand plants and shrubs must there be in the thick wood and jungles that by growing altogether in the shade cannot be supposed to purify the air. On the contrary, they may, by harbouring moisture and obstructing ventilation, prove productive of the most unsalutary vapours, requiring perhaps little else than the concomitants of decayed vegeta-

* See Dr. Fowle's Practical Treatise on the different Fevers of the West Indies, pages xvii., xviii., xix., xx. and xxi. of the Introduction.

† See Zimmerman's Experience, Vol. 2nd, pages 140, 141, English translation.

‡ See Dr. Trotter's Medicina Nautica, Vol. 3rd, page 273.

ble matter and a close and steamy heat to induce that distempered state of the atmosphere which we suppose to be the remote cause of the malady in question— a cause, too, which there is but too much reason to believe was most amply supplied amongst the overgrown, shady, dark and ill-ventilated woods, valleys and mountains of the Dindigul, Pylney* and Madura countries, as well as amongst those of that immense range which we have so often spoken of as dividing the peninsula.

By the experiments of the Abbé Nollet it appears that the electric matter has the power of accelerating the growth of vegetables, and Dr. A. Wilson† makes no doubt but that it promotes putrefaction in animal bodies. It may therefore here become a question how far this matter, which we have noticed was very abundant in the atmosphere during some of the most unhealthy periods, may not have assisted in producing a distempered state of the air.

The predisposing causes of remittent and intermittent fever are well known to be those that operate by producing debility, such as poor or insufficient diet, great fatigue, frequent exposure to cold and damp without proper covering, habitual inebriety, grief, sorrow and mental anxiety; in short, whatever exhausts or diminishes the activity of the powers of life; and hence it is in the present instance that we find the disease has invariably been most fatal in such villages as stand low, or in the vicinity of marshy lands, and amongst the poor‡ and hard working inhabitants, who are ill fed, badly clothed,§ and miserably lodged. And perhaps this cannot be better exemplified than by our now stating that at Madura, in a period of sixteen months up to the 1st of April 1811, there did not happen one casualty amongst the troops at

* The Pylney mountains have repeatedly been mentioned in this report as having been supposed, by a great majority of the natives, to be the positive source whence sprang the epidemic fever; but while there was one great cause (irregularity of seasons) operating so universally and extending to all the districts, we cannot suppose that there was but a single point whence the mischief was diffused; though we think it by no means unlikely, considering the peculiarly mountainous and woody nature of the Pylney division of the Dindigul country (where the hills are of an immense height and so deep as to join the Western Ghauts) that the disease there may have attracted very early notice.

†See Dr. A. Wilson's Observations on the Influence of Climate, pages 18, 19.

‡ See No. 6, being Mr Hepburn's answers to Queries which were put to him by the Medical Committee.

§ Malthus in his Essay on Population tells us that all epidemics make their principal ravages amongst the lower classes. See the work, Vol. 2nd, page 59.

that station, though the poor inhabitants of the garrison were very unhealthy during the same period. Again, at Dindigul out of three companies usually stationed there, but two deaths occurred from the 1st of March 1810 to the 30th of November of the same year, though the needy inhabitants of the town who were comparatively worse fed and clothed were dying by hundreds; and at Darampooram, while the epidemic was at its greatest height, the prisoners in jail who were well fed and lodged in a high, dry sheltered situation, suffered but in a trifling degree.

Supposing then that there exists in the atmosphere the remote cause of epidemic fever and that there has also been superinduced a predisposition to be acted upon by it, there are still another set of causes, termed exciting, which often hasten the approach of the pending evil. Perhaps the most certain of these are exposure to cold and damp, while the body has been relaxed by preceding heat and influence of ardent solar rays on an irritable frame.

The bad effects of the last are self-evident; the malinfluence of the first has been noticed by many writers of distinction, particularly by Pringle* and Bursarius,† and it appears to have proved the certain source of incalculable mischief in these provinces, in which during the months of March and April 1811 the nights were extremely sultry and the dews, which by this time should have ceased to appear, still fell in great abundance. "The heat of the early part "of the night" (says Mr. Hepburn in a letter‡ to the Revenue Board) "induced many of the natives to sleep in the "open air, by which means they become exposed, while "their bodies were still hot, to the chill fogs and damps of "the morning, and which in all probability was the cause "of the fever which ensued."

But if such fogs and damps can be productive of consequences of so serious a nature in our open country, it is but reasonable to suppose that in the neighbourhood of mountains thickly clothed with wood, they must prove still a more certain cause of evil; and so it is that we have in every instance found the epidemic most prevalent in situations close to hills, where, as Bontius § has justly observed,

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* See Pringle's Observations on the Diseases of the Army, page 72, 2nd Edition.

† See Bursarius' Institutions of Medicine, Vol. 1st page 230.

‡ Of date the 14th May 1811.

§ See Bontius' Account of the East Indies, page 100, English translation.

(when speaking of Batavia) there is but too often breathed, about the dawn of day, cold noxious vapours, the more certainly dangerous by their succeeding to the "tepid" warmth of the night.

SECTION FIFTH.

Nature of the Epidemic and its various types—The notions of the Vytians, or Tamil Medical Practitioners respecting it.

The disease which has proved so fatal in the Southern Provinces does not differ in its nature from the common endemic of this country, which at certain seasons* and in peculiar situations† may be every year met with; its having been rendered epidemic on the present occasion is altogether to be ascribed to the causes‡ we have already mentioned.

Pringle has told us that intermittents are "the great endemic of marshy countries," and that they rage most in hot summers during a close and moist state of the air; but he might as well have added "of woody and mountainous country" which are so well known in this part of the world to occasion the malady we now treat of, that in the more northern parts of Hindoostan it is called "the jungle fever," and on the Coromandel Coast "the hill fever."

This disease, as in the West Indies, is either remittent or intermittent according to circumstances of constitution, management of the patient or season of the year; but we are happy to say that the second is by far the most common. Delicate people of naturally irritable habits who have rendered them so by irregularities or want of care§ are sometimes attacked by the remittent form, which either proves bilious or nervous as the constitution inclines. The same happens to those who, with even a stronger frame of

* The most unhealthy season in this district is from the time that the north-east monsoon rains cease to the middle of May.

† Such as amongst the hills in the Ganjam Circars, amongst those near Palavaram in the Rajahmundry district, &c., &c., &c.

‡ Dr. John Clark in his Observation on the Diseases of Long Voyages says, "remittent fever may occur at any time, but seldom rages epidemically except in close, moist and sultry weather."—See Vol. 1, page 157.

§ Some of the worst cases of remittent fever in Europeans we have known, appeared to have been brought on by habits of quacking and taking frequent calomel purges, than which nothing can be more injurious to the digestive powers nor more likely to predispose the body to receive fever.

body and phlogistic diathesis, have been injudiciously treated at the commencement of the disorder, by having bark given to them too freely before proper evacuations had been procured. And it has also been observed by us that, as the season became hotter, the fever was more apt to put on a remittent form than at an earlier period, while perhaps rains were falling and the atmosphere comparatively cool. In confirmation of what we have ourselves witnessed in this respect, we shall add that this peculiarity has also been called to our attention by a well written communication from Mr. Abercromby, Surgeon of His Majesty's 34th Regiment, to Mr. Boswell, Superintending Surgeon of the Hyderabad Subsidiary Force, and we find that both Hillary* and Dr. Maclean† in their works on the Diseases of Barbadoes, and Lieut. Domingo have made similar observations.

The more robust have been usually seized with fever of the intermittent kind, and by every account we have received it appears that males have suffered more than females; and young and those of middle age more than old men and children.

The epidemic fever when it assumes the remittent form sometimes comes on very gradually. The patient for two or even three days before being confined to bed feels himself much out of sorts, his appetite fails him, he has a slight squeamishness at stomach, particularly on seeing animal food; he complains of a feeling of universal lassitude and of alternate heats and chills; there is a stupid heaviness, if not a pain, in the head; the eyes are clouded, the ears ring and the bowels are invariably costive. In other cases the approach of the enemy is more rapid; and rigors, great debility, vertigo, sickness at stomach or vomiting, sooner ensue and never fail to usher in the disease.

The first paroxysm, which is often attended with delirium, and is sometimes in young habits accompanied by a bleeding at the nose, after having continued for a certain period with symptoms varying according to the strength of habit and constitution of the sufferer, terminates in a sweat, not however of that profuse and fluent kind which succeeds to the hot fit of a regular ague, but clammy and sometimes indistinct. It however, has the effect of affording relief by considerably lowering the pulse and cooling the body

* See Hillary's Observations on the Diseases of Barbadoes, page 91.

† See Dr. Maclean's Inquiry into the Nature and Causes of the Great Mortality at St. Domingo, pages 86,87.

(which in many cases has been heated so high as to raise the thermometer to the 103rd or 104th degree) but neither the natural feelings of the skin nor the proper state of the pulse are thereby induced; the former gives a singular dry and uncomfortable sensation to the touch and the other is smaller and a little quicker than it ought to be; the patient continues languid and has but little appetite for food.

If proper steps are not now taken to bring on a regular intermission, or if from the violence of the disease it cannot be done, this first remission will not be of long duration,* a paroxysm more severe in every respect soon ensues, usually ushered in by vomiting (in some cases of bile), and soon followed by excessive heat of skin, delirium, great thirst, difficulty of respiration and a most distressing febrile anxiety; and the tongue, which at first was only white and foul, now begins to look parched and brownish. The next remission, when it takes place, is less perfect than the first and brings still less relief, and in this way if a check cannot be given to the fever, or if (which they sometimes do) natural loose bilious evacuations do not occur to supply the place of diaphoresis, it will run on its fatal course, each succeeding attack proving worse than that which preceded it, till nature exhausted at last begins to give way. The pulse gradually loses its strength, the countenance shrinks and looks sallow, the eyes become dim, the abdomen swells from visceral congestions and the stomach loathes every sort of food. Shortly after this period hiccough comes on, an alarming stupor takes place of low delirium and death quickly closes the scene. But such remittents have not been very frequent in these provinces and, when they did occur, were, we believe, mostly occasioned by neglect or unpardonable blunders at the beginning of the disease.

The intermittent form of the epidemic is infinitely more common and much more tractable. Dr. Fowle† as well as Dr. James Clark‡ have told us that the rigor in such cases in the West Indies is not so great in proportion to the succeeding heat as it is in England. We cannot say, however, that we have observed any such peculiarity in this country: The cold stage§ here is often of long continuance and most

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* Not usually longer than from five to eight hours.

† See his Practical Treatise on the Fevers of the West Indies, pages 1,2.

‡ See Dr. James Clark's Treatise on the Yellow Fever of Dominica, pages 92,93.

§ Its duration is commonly from half an hour to nearly two hours.

distressing; vomiting often takes place at the beginning of the hot fit and is sometimes succeeded by delirium.

Agues (of all kinds) either commence at once with rigor, or a shaking fit, or they first shew themselves with a febrile attack more or less continued and usually of about two days' duration. This, on going off, by means of the usual remedies, leaves the patient for the most part tolerably well and he continues so for a short time, after which the fever returns and observes the type which is to distinguish it.

With regard to the question of how far this epidemic ought to be considered as contagious, we have no hesitation in saying that we believe it not to be so in any of its natural forms. Whatever might happen in cases which from improper treatment had been allowed to pass into low continued fevers, attended with the usual symptoms of putrescence, though even then it can never extend far in a country like this, where the heat of the atmosphere seems peculiarly inimical as well to its first production as to its spreading, and where the free admission of fresh air cannot fail quickly to break and dissipate the circle of contagion.

The types under which the intermittent has appeared are the following:—1st, simple Tertian; 2nd, the double Tertian, which would seem to consist of the junction of two single tertians that run each a separate and independent course, with similar paroxysms on alternate days; 3rd, Quotidian; 4th, Quartan; and 5th, Irregular. To show which of these has most frequently occurred amongst the natives during the present sickness, we cannot do better than here subjoin a report of the sick in the Regimental Hospital of Dindigul taken on the 1st of June 1811. The effective strength of the detachment being then 255 men.

Simple Tertian.	Double Tertian.	Irregular.	Quotidian.	Quartan.	Convalescents.	Total.
30	26	24	13	4	20	117

Of these 53 had been in hospital for one month, 39 for

two months, 23 for three months, and 2 for upwards of three months.

From the above it will appear that the simple and double tertian types were the most common at Dindigul; and we learn from Dr. Jackson* and Dr. Cleghorn† that they were also those which were most frequently met with in Jamaica and Minorca.

Mr. Sinac has denied that there is any such thing in nature as a regular quotidian, and Dr. James Clark‡ says that he never saw a case of it in Dominica. We cannot, however, doubt of its existence in this country, where, on the contrary, when it does occur, it is almost invariably well marked with paroxysms returning at nearly equal periods, though the cold fit by no means continues so long as in the simple tertian. It is often a distressing affection from its commonly attacking those of weak constitutions; and, by leaving but little time for taking the bark, is perhaps apt sooner to occasion visceral obstructions and œdematous swellings than any other form of the disease.

The quartan type is rare, but we have invariably found it very obstinate and it frequently on that account brings on a morbid state of the spleen and consequent dropsy. Pierre Compet § in his "Maladies graves de la zone torride" makes similar observations. He says that in many instances in the West Indies this form of intermittent fever succeeds a tertian, when badly treated, by which means the morbific humor is thrown upon the abdominal viscera.

The irregular disease, by observing no exact periods, is very troublesome, and seems to us to correspond in its nature with what Hoffman has called "The Semi-tertian."

The types of the fever are sometimes changed during the course of the malady; the conversion of a remittent into a tertian is favorable to the patient, as is that of a double tertian into a single one. Tertians, on the other hand, are sometimes unfortunately (by mismanagement) turned into remittents, irregular or even continued fevers, as are tertian into double tertians, quotidians or quartans.

The Vyteans or Tamil medical practitioners ascribe the epidemic fever chiefly to two causes—a superabundance of

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* See Dr. Jackson on the Fevers of Jamaica, page 13.

† See Cleghorn's Minorca, page 163.

‡ See Dr. James Clark's Treatise on the Yellow Fever of the Island of Dominica, page 61.

§ See his "Maladies graves de la zone torride," page 96.

moisture in the air and earth and the bad quality of the water they have in consequence been obliged to drink. To intermittent fever they give the name of Seetajorum, or in more common language Coolloor Cajil. The most dangerous type, they are of opinion, is the Quotidian or Woodadajorum; but we are inclined to think that they often confound this with remittent fever, for which, however, they have got a particular appellation Tavajorum,* which signifies a fever accompanied with excessive thirst. The Tertian type they distinguish by the name of Moonamoray jorum, and the Quartan by that of Nalamorayjorum. They allow this last to be of a most obstinate nature, and often have more faith in a change of season for its removal than in any medicine they can administer.

(*To be concluded.*)

ART. XII.—*Note on the Treatment of Bubo.* By Assistant Apothecary STAGGS, 76th Regiment.

WITH the kind permission of Surgeon W. F. Cullen, H. M. 2-24th Regiment, I have been allowed to report the following method of treatment, generally adopted in cases of inflamed glands (inguinal) in the hospital of that corps.

The treatment consists in transfixion by means of an ordinary exploring needle and the subsequent inunction of Unguentum Hydrargyri into the bubo. When a patient presents himself at the hospital with inflamed glands, from whatever cause, he is allowed to rest for a few days; measures are taken to improve his general health if indifferent; and, in the meanwhile, hot fomentations and poultices are applied to the part. At this period, in most cases, suppuration is evidenced by fluctuation, &c.; but even should this not supervene, an exploring needle is introduced *just under* the skin, for about the extent of half an inch at four points, crucially. The immediate result of this is the mere oozing out of a little blood; very little pain is experienced by the patient during the operation; a little mercurial ointment (about 3ss.) is now rubbed into the wounds and surface of the gland morning and evening; no evil results follow; but, after a few days, a very perceptible decrease in the size of the tumour is

* This name is also given, but improperly to Typhus fever, which the better informed call *Kistnah Doshum.* It is much dreaded amongst the Hindoos, from a supposition that it never takes place but to mark the vengeance of heaven for the commission of some heinous crime.

noticed: at all events, at the end of a fortnight, usually from date of operation, the patient is considered fit for duty. It has been found necessary in some instances where the decrease proceeds somewhat tardily, to repeat the operation a second and even a third time, before total disappearance of the swelling is observed.

This plan of treatment has been found very generally successful in this hospital, and its advantages over the almost stereotyped one of "opening a bubo" with the knife during the suppurative stage, are, that it does not produce any intractable sinuses, or open ulcers, which often lay the patient up for months before an actual cure is effected; nor does it leave any ugly cicatrices after the healing process is completed.

I trust the above is sufficiently novel and interesting to warrant its publication in the *Madras Monthly Journal of Medical Science*. I have been induced to send this for publication with the view, simply, of giving the practice of treating inguinal glandular swellings, as obtaining in the 2-24th Regimental hospital, a more extensive trial.

ART. XIII.—*A Rejoinder to Dr. Macnamara's Defence of his Scheme of Water Analysis.* By EDWARD NICHOLSON, F. C. S., Assistant Surgeon, R. A., Analyst of Waters, Mysore, Northern and Ceded Districts.

SUCH very important issues depend on the settlement of the question I have raised as to the value of Dr. Macnamara's scheme of water analysis, that I need hardly apologize for taking up the space of the Journal with a rejoinder to his defence. The Bengal reports of water analysis represent an outlay of considerably over a lac of rupees, and it is of some public as well as scientific interest to know whether it is likely that further outlay under this head will be wasted as before, or whether there is any chance of its being judiciously expended.

The facts of the case are, that Dr. Macnamara was entrusted with the superintendence of the Bengal system of water analysis, carried out after his own scheme; this went on for four years, perhaps for more, during three years of which time it was under Dr. Macnamara's direction. During his absence at home he recast his scheme as far as the chemical

part of it, availing himself of the suggestions of English sanitary authorities, and he has caused it to be imposed on all Indian analysts. Certain processes are laid down, being considered those best suited for the "dâk bungalow or spare barrack room," and they are consequently enforced by the executive authorities. "The aim of the compilation is to serve as a guide to the detection of danger in the special form of contaminated or impure water."

My case against Dr. Macnamara's scheme is this. That if the first scheme was bad, and the deductions from it erroneous and often mischievous, it had the redeeming quality of simply ignoring chemistry. Its defects were patent. But the present scheme, while equally devoid of any traces of chemical experience in the compilation, is of a highly pretentious character and might easily impose upon persons not practically acquainted with chemistry. It is a patchwork of book processes, and I look in vain for any traces of the experience one would expect in a scheme compiled after three years' superintendence of Indian water analysis. I brought forward evidence in support of my assertions. Dr. Macnamara's defence may be brought under three heads:—

1*st.*—That he is not solely responsible for the scheme.

2*nd.*—That the processes he gave are sound, but he owns to having compiled them principally from text-books of analysis, and to having omitted to verify by experiment their exactitude and their applicability to the circumstances of Indian water analysis.

3*rd.*—He disclaims responsibility for the condemnation of the Hurripore and Meean Meer waters, it having been passed by his substitute.

I shall not open any new ground, but confine myself to the above points, only giving on the third point such evidence as will show that the condemnation of the above water was strictly in accordance with Dr. Macnamara's principles.

1*st.*—As to the responsibility of Dr. Macnamara for the scheme it cannot be for a moment allowed that, the scheme having been submitted to Drs. Parkes and Angus Smith, he, its originator, is absolved from responsibility. In default of any evidence as to the extent of the criticisms and suggestions he received from these gentlemen, it may be assumed that they would take a good deal for granted in a scheme originated by the Chemical Examiner to the

Government of India after three years' superintendence of Indian water analysis. However this may be, the scheme appeared under Dr. Macnamara's name, and he is clearly responsible for it.

2*nd*.—Regarding the chemistry of the scheme, Dr. Macnamara retorts that the charges of want of practical experience must recoil on my own head. I am so little afraid of this, that I will add not a word to what I have already said, and will content myself with rebutting by a few facts his quotations of authorities on the process for the determination of alkalies. Dr. Macnamara has agreed that his scheme shall stand or fall by the truth or otherwise of his statement, and I hold him to his agreement. If I were wrong I would openly renounce calling myself a chemist. I expect that Dr. Macnamara on receiving proof that he is wrong will renounce his scheme in the fullest sense. The statement may be thus taken in Dr. Macnamara's own words (page 426): "But if the alkaline sulphates are present in only small amount, this conversion [into chlorides] may be more conveniently brought about by the addition of chloride of ammonium to the solution, for on evaporation and subsequent ignition, the ammonium carries off the sulphuric acid, leaving the chlorine in combination as chloride of sodium or of potassium."

This is the statement which Dr. Macnamara maintains. I will proceed to prove it unfounded in fact. Authorities are of no account in questions of fact; an error occurring in one text-book is often copied unto another, as the compilers of such comprehensive manuals cannot personally verify every one amongst the large number of processes mentioned as available.

It must be remembered that the question is not whether some chloride is or is not formed, whether in an experiment I shall or shall not "find in the residue abundance of chloride of sodium," the question is whether what can be fairly called a small amount of sulphuric acid can be expelled (that is to say, totally or nearly totally expelled) by ignition with chloride of ammonium. I am free to own that a certain minute proportion of chloride is formed—a proportion so minute that, operating on small amounts of salts, the trace observed is undeterminable, and it is only by taking comparatively large quantities that I was able to determine the amount. It never exceeds 3 per 1,000 of the sulphate operated on, and repeated ignitions (operating five times

successively with large excess of ammonium chloride and a sufficient amount of water) failed to produce 1 per cent. of change. The reasons why this occurs and why the proportion must always be minute, I cannot here enter into. Suffice it to say that my counter-statement that no chloride is formed requires to be modified to the extent of 3 in 1000; complete accuracy being represented by 1,000, my statement was accurate to the extent of 997 parts out of 1,000.

But this is not the real point. If 10 or even 50 per cent. of sulphuric acid were expelled, Dr. Macnamara's statement would still be wrong; the sulphuric acid must be *carried off, i. e.*, at least 90 or 95 per cent. of it expelled and replaced by chlorine. The following experiments are conclusive on this point.

(*a.*)—*Experiment with pure salts.*—0·0324 grm. of pure sodium sulphate was mixed with 0·0500 grm. of pure sodium chloride (to assimilate the experiment to the actual process on the mixture of alkaline salts obtained in operating on a water containing a small amount of sulphates). To this mixture we added 0·0840 grm. (more than the proportion advised by Dr. Macnamara) of pure ammonium chloride. and a sufficiency of distilled water for perfect solution. The residue obtained by evaporation on the water-bath was ignited and dissolved in water; the sulphuric acid was determined in it and in an equal quantity of the original sulphate. The results were—

Original sulphate.....	0·0222 grm.
Residue of experiment.....	0·0221 „
Theory.....	0 0219 „

Showing that there was practically no loss of sulphuric acid, the deviations from the theoretical amount being in both cases well within the limits of allowable error.

(*b.*) *Experiment on a water.*—I selected amongst the waters of Waltair that which contained the least amount of sulphates; the actual amount being also what may be fairly called small, and I operated on a small quantity of water, 453 c. c., so as to have as little sulphuric acid as possible to expel. The extraction of the alkaline salts was conducted in strict accordance with the spirit of the process indicated. The residue of what should have been alkaline chlorides amounted to 0·1114 grm. per litre, of which 0·0157 grm. was silica; the soluble portion gave 0·0123 grm. of sulphuric acid. In an equal amount of the water I determined the sulphuric acid originally existing, strictly in accordance

with the scheme; the amount was 0·0112 grm. per litre, showing that the sulphuric acid was not expelled by the ignition with ammonium chloride. It had apparently somewhat increased; this is explained by the process for the sulphuric acid yielding an amount rather too low, owing to barium sulphate being not altogether insoluble, and some being held in solution when sulphuric acid is precipitated in an unconcentrated water as ordered in the scheme. The amount of sulphuric acid to be expelled by ignition with ammonium chloride was only five milligrammes, yet so far from its being expelled, I was actually able to determine it more accurately in the ignited residue than in the 453 c. c. of unconcentrated water.

3*rd*.—I assert that the Bengal water analyses and the results deduced from them by their superintendent inspire profound distrust of his capacity for dealing both with the chemical and hygienic aspects of water analysis. They also are fatal to any assertion that medical officers are qualified by a zealous pursuit of the Netley course of Hygiene, for undertaking analyses of waters.

If there is one branch of hygienic examination more insisted on, or more patiently taught than another at the Army Medical School, it is the examination of water by means of the soap test. Without entering into the principles of the soap test, I will only remind my readers that every degree of permanent hardness means somewhat more than one grain of earthy 'soluble' salts (magnesium or calcium chlorides, sulphates, nitrates, &c.), whilst each degree of removable hardness means about one grain of 'insoluble' earthy salts (calcium and magnesium carbonates and silicates). It will be sufficiently accurate to say that each grain of insoluble earthy salts (after deduction of any silica) represents one degree of *removable* hardness, and more, often much more, than one degree of *total* hardness, as this is the hardness of the 'insoluble' earthy salts, of any 'soluble' earthy salts, and of the free carbonic acid present.

Now one of the most peculiar things about the Bengal analyses is the general inability of all the analysts but one to rise above the figure 9 in the soap test. Waters may contain 20 or 30 grs. per gallon of 'insoluble' earthy insoluble salts, to say nothing of 'soluble' earthy salts, yet before the soap test marks 10 degrees it appears to break down. Lest it should be thought that this is the work of "some bungler," I may mention that Dr. Macnamara himself ap-

pears to be equally weak in the soap test and to have wasted his soap as freely as any of the analysts. There are not many of his analyses complete. I have, however, found a page of them in the fourth volume of reports, and I extract from it the following figures—every analysis in which the degrees are given being set down.

Total hardness, degrees	5·2	6·1	9·8	5·4	4·2	1·8	4·1	6·8	5·4	1·9	3·4
Insoluble earthy salts, grains ...	6·0	29·0	14·5	6·0	5·95	2·0	3·5	17·1	14·0	2·4	4·6

(Silica was 'traces' or none throughout.)

The figures speak for themselves.

Of the few amongst these analyses that are complete, I quote two *in extenso* with the remarks.

	Well in the Fort near Chowringee Gate Road.	Well in the Fort near the Treasury Gate.
Physical properties ...	Good	Good
Reaction	Alkaline.	Alkaline.
Total hardness, degrees ...	6·1	9·8
Permanent do ...	4·6	1·8
Removable do ...	1·5	8·0
Grains of oxygen required for organic matter of 1,000 grs.	·00019	.000125
Ammonia	...	Present.
Nitric acid, grs. per gallon...	2·0	1·0
Total solids do ...	67·6	38·0
Volatile matters do ...	1·6	1·5
Mineral do do ...	66·0	3·65
Earthy salts, &c., insoluble, grs. per gallon ..	29·0	14·5
Lime calculated as carb., grs. per gallon	18·0*	10·0†
Silica, grs. per gallon ...	Traces.	Traces.
Soluble salts do ...	37·0	22·0
Chloride of sodium do ...	20·5	12·5
Sulphate of soda do ...	5·5	3·6
Carbonate of soda do ...	Not determined.	...

* 18 grs. of calcium carbonate get only 1·5 degree of removable hardness.
† 10 grs. of calcium carbonate gave 8 degrees removable hardness.

Remarks (page 29 of Report.)

Well in the Fort near Chowringhee Gate Road.—It is a properly constructed well, having an efficient parapet, platform and drain; it is 41 feet deep and contains about 6 feet of water. The water is used by the sepoys and camp followers, but not nearly so much as formerly, for with few exceptions, the men greatly prefer the water from the neighbouring stand-pipe. Forty-eight feet from the well is a bazaar and the sepoys' quarters are close at hand; no doubt their neighbourhood and the constant washing that goes on, not only of bodies but of cooking utensils, in the vicinity of the well, is the reason of the impurity of the water. The water contains 67·6 grains per gallon of solid matters, including 20·5 grains of common salt. The sepoys consider the water to be of good quality.

Well in the Fort near the Treasury Gate.—This well is also properly constructed; it is 29 feet deep and contains about 4 feet of water. The well is now chiefly used for ablutionary purposes and only to a slight extent as a drinking water. There is no bazaar or other permanent source of pollution in the neighbourhood of the well, yet the water contains a rather large amount, 38 grains to the gallon, of solid constituents. including 12·5 grains of common salt, No doubt much of the saline matter in the well is derived from the washings of sepoys' bodies and cooking utensils. This water is considered by the sepoys very good.

Let us now examine how far the analysis justifies Dr. Macnamara's conclusions. Let us take the second well; the criticism is the same on both. There is a water condemned as containing the saline matter from men's bodies and from cooking utensils; how far does the examination of the water justify these assertions? *There is not an atom of evidence to justify the assertion.* The water is, to a very slight extent, brackish; the presence of sulphates in ample proportion to the chlorides is good evidence of the latter being caused by a slight admixture of marine salts with a naturally pure water; the amount of organic matter as measured by the permanganate test is about the minimum; the quantity of nitric acid much less than usual in Indian subsoil waters; the presence of ammonia is a trivial circumstance (the first well contained none). There is no possible source of sewage contamination near.

But Dr. Macnamara with two years' experience of Indian water analysis, still laboured under the idea that nitric acid is always a product of animal pollution and that an excess of chloride is owing to the same cause. He finds a small amount of nitric acid and an excess of chloride, and at once jumps to the conclusion that the wells are contaminated by human and kitchen refuse. He has before him the fact that there is no possible source of sewage pollution in the neighbourhood, that the well is of good construction so as to keep out direct surface infiltrations, that the physical properties of the water are good, that the amount of organic matter is nearly the minimum possible, that the proportion of sulphates accompanying the chlorides is as nearly as possible that occurring in sea-water; but he has no eyes for these facts; he sees nothing but nitric acid and the chlorides, and the well is condemned. A pretext is, of course, required; it is readily found. A sepoy not far off is perhaps washing his brass vessels or even throwing a pot of water over himself; accordingly "no doubt that much of the saline matter in the well is derived from the sepoys' bodies and cooking utensils."

The fact is that Dr. Macnamara then as now took his chemistry and his hygiene out of an English book. He had seen it stated that in England nitrates when existing in any quantity are generally the oxidized products of sewage contamination; he did not reflect that, possibly in India, the great producing country of nitre, the occurrence of nitrates in waters may be quite normal; he did not think of ascertaining by experiment whether such might not be the fact, but he bows at once to "the authorities" and condemns every Indian water that happens to have nitric acid in it. Speaking of the excellent spring water of Murree (page 32 of same report) he says, "the springs being fed by the surface drainage which sinks into the subsoil of the hill, of course a considerable amount of sewage matter mixes with the water, and becoming oxidized, is represented by the nitric acid which is present in it." These waters, of most excellent quality, happen to contain a small amount of nitric acid, estimated at one grain per gallon; accordingly they are declared to be polluted by oxidized sewage.

Such mistakes might be excused in a beginner just out from England, imbued with the 'previous sewage contamination' theory; but to find them perpetrated by the superintendent of two years' systematic analysis is too bad. Dr. Macnamara

might have been expected to learn something by experience during his campaign against the potable waters of Bengal; he appears to have learnt nothing. With a blind reverence for "the authorities," he made not the slightest use of the splendid opportunities before him; with unquestioning faith in home theoretical views, facts seem not to have existed for him; with an apparent incapacity for appreciating what is evidence, he condemned good waters wholesale. He now publishes a scheme which shall "aid professional chemists who might be employed in analyzing waters in India" and "serve as a guide to the detection of danger in the special form of contaminated or impure water."

In conclusion I cannot but express my regret at having to speak strongly on this subject, but any milder criticism might have served as an excuse for amendments in a scheme fundamentally bad. I render every justice to Dr. Macnamara's labours in the superintendence and compilation of the Bengal analysis; had his zeal been well directed, most valuable results would certainly have been obtained.

ART. XIV.—*A Case of Enteric Fever.* By Assistant Apothecary H. Judge.

August 8th, 1869.—Peter John C———, Æt. 19, service 1 year and 8 months, European of H. M.——Foot, an ordinary built man, of bilious temperament, was admitted into hospital on the 7th instant, suffering from fever of four days' duration. The attack was ushered in by rigors, and a general sense of chilliness, alternating with flushing of the face and heat of skin. This was quickly followed by pain in the head, loss of appetite, great thirst and spontaneous diarrhœa; dejections bilious.

Appears this morning somewhat prostrated and inclined to be drowsy. Skin of a pungent heat; pulse full and quick; tongue foul and dry. Complains of tenderness on pressure over the left iliac region, and there is also some irritability of stomach present.

℞. Quiniæ Sulphatis gr. viii.
Liq. Am. Acetatis : ℥i.
Pot. Nitratis gr. xxxii.
Sp. Am. Nit. ℥ iss.
Aquæ Camphoræ ad. ℥ vi. *M.*

Ft. Mist.
A fourth part every three hours.
P. Ipecac. Co. gr. x. h. s.s.
Body to be sponged with tepid water. Blister to nape.
Beef-tea diet.
Two pints lime-juice.

9th.—Diarrhœa severe during the night and some hæmorrhage from the nose occurred. Complains of soreness in the head; pulse not so strong; tongue brown and dry; is inclined to eat a little.

Cont. mixture.

℞ Cupri Sulphatis
Ex. Opii. āā ¼ gr.
Ex. Gentianæ q. s.
M. Ft. pil. i.
Four times during the day.
Beef-tea diet.
Beef-tea 1 pint extra.
Milk 1 pint.
Eggs 4.
Port-wine 6 oz.

Vespere.—Great tenderness over the whole abdomen. Diarrhœa less.

Turpentine stupes.
P. Ipecac. Co. gr. x. h. s.s.

10th.—Expresses himself as being 'about the same way.' Slept well during the night. Diarrhœa still persists, and the evacuations have assumed the characteristic ochre colour. Tongue becoming browner, though clean and red at the tip and edges; pulse still vigorous; fever continues; a few rose-coloured spots are visible on the abdomen. 8th day of disease.

℞ T. Kino ʒ iss.
T. Catechu ʒ iss.
Acidi Gallici gr. xv.
Aq. Cinnamomi ℥ iii. *M.*
Ft. Mist.
A third part three times a day.
℞ M. Diaphoretic ℥ i.
Three times a day, during the intervals.
Tepid sponging. Port-wine 8 oz.

Cont. same diet.

11*th.*—Was wakeful during the greater part of last night, and is a little wandering in mind this morning. Pulse feeble, quick; tongue becoming darker and drier with incrustation of sordes on lips and teeth. Diarrhœa continues. A fresh crop of spots have appeared on the abdomen, and a few on the upper extremities.

Cont. Astringent Mix.

Lime water to be added to milk, 1 to 4 parts.

Abdomen to be covered completely with spongio-piline wrung out of warm water.

Diet same, with extras.

12*th.*—States he feels very bad this morning. Had short snatches of sleep during the night, waking up at intervals and getting out of bed; diarrhœa yielding; motions of a darker colour; takes his food and wine well; tongue still brown and dry; skin not so hot; pulse good. Epistaxis occurred again yester afternoon, but not to any extent.

Cont. Med. and Diet.

13*th.*—Looks better this morning; slept tolerably well during the night; appetite not so good as previous days; pulse fuller and slower; skin much reduced in temperature, and tongue smooth and moist. Irritability of stomach set in again yesterday and still continues. A recurrence of epistaxis yesterday.

Cont. omnia.

14*th.*—States he feels better; apparently improving; slept well; no delirium; bowels moved only once. A fresh crop of spots seen over left hypochondrium. There was a marked exacerbation of the fever last evening with a remission of the symptoms this morning. Still some tenderness over the abdomen; tongue moist and not so brown.

Cont. nourishment as before.

Three drops of Dil. Hydrocy. Acid for a dose in mucilage when sickness of stomach occurs.

15*th.*—Very restless during the night; moaned a good deal; expression of countenance this morning very vague; eruption well marked on thorax; bowels moved thrice last night, motions still yellowish and fluid; tongue cleaning; pulse slow but moderately full. Great anorexia present, but stomach not so irritable.

Resume astring. mix.

Aq. Calcis with milk.

16*th.*—Passed a very restless night. Refuses nourishment of every kind, and is emaciating in consequence. Pulse keeps good; tongue moist, cleaning; eruption fading.

Cont. Om.

P. Ipecac. Co. gr. x. h. s.s.

17*th.*—Feels much refreshed this morning after a good night's rest, and expresses himself a deal better. Speaks quite rationally. Skin acting well. Emaciation progressing; tongue dry but clean; sordes have disappeared, and there is now no tenderness whatever over abdomen.

Cont. Dover's powder at bed-time.

18*th.*—Progressing favourably; slept poorly last night but very well during the day; skin warm; tongue clean; pulse fuller and slower, appetite variable; fever declining.

Cont. as before.

Brandy 3 oz.
Soda water 2 bottles.

19*th.*—Doing well; takes his food better, and is gaining strength; pulse good; skin cool; no diarrhœa.

Cont.

20*th.*—Improving daily; appetite returning; tongue keeping clean and moist; eruption has quite faded on the abdomen those on the chest still visible, though of faint colour; countenance more natural and becoming more solicitous as to his state.

Nil.

21*st.*—Had a good night's rest, and looks very well this morning. No fever; bowels rather sluggish; eruption has nearly quite disappeared; a few spots only remaining visible on the chest; tongue clean; skin natural; pulse good.

℞ Ol. Ricini. ℥ss.
T. Rhei Co. ℥ i.
Aq. Cinnamomi ℥ i. *M.*
F. haust. st.

22*nd.*—Steadily improving; eruption scarcely perceptible; appetite better; sleeps well; bowels acting; skin cool. Complains this morning of severe pain in the left knee-joint, which presents nothing however abnormal to call for direct treatment.

Flannel roller to knee-joint.

23*rd.*—Fever has declined entirely; no eruption whatever visible; is gaining flesh; bowels regular; tongue clean and moist; sleeps fairly and appetite good.

Nil.

24*th.*—Passed a fair night; skin a little warm; pulse normal; motions healthy.

25*th.*—Patient slowly but steadily convalescing. No febrile symptoms.

Nil.

28*th.*—Doing favorably; gaining strength.

September 4*th.*—Has continued to progress favorably since last report without anything special to note.

12*th.*—Doing very well, and picking up flesh.

Nil.

20*th.*—Quite well.

Discharged.

Remarks.—Doubtless hardly one of the medical profession would read the above case without being struck at an entire absence of thermometrical observations and registrations of the pulse and respiration—data so invaluable in *diagnosis* in enteric fever. But I must apologize by stating that the omissions have arisen not from any want of pains in case-taking, or observation at the bed-side, but from the bare fact that there was no thermometer in the hospital at the time, and that in the absence of information derivable from such a source, I thought it unnecessary to detail points of *minor* importance, that is, viewed *diagnostically*. I trust, however, the case will not be uninteresting, inasmuch as it faithfully exhibits the symptoms and progress of so formidable a disease as that under review.

THE NATIVE ARMY IN 1870.

The Medical and Sanitary Report of the Native Army of Madras for 1870 is one that will repay perusal. It has, however, the universal fault of Government blue books in being not only large, but larger than there is any occasion for. It fills 125 folio pages, 120 of which consist of closely printed matter, the remaining 5 being devoted to statistics.

The main bulk is occupied by the annual reports of executive medical officers or large extracts from them. Many of these are, to use the words of one of the administrative officers, barren of interest. This being the case, one wonders why they are published. They contain nothing new. Some of these reports fill three or four pages, and even those reported to contain nothing of interest have a page and a half devoted to them. No one cares to read year after year that the huts in any given station are too small and over-crowded; that the state of the drains in the lines is most unsatisfactory, and that the smells arising therefrom are most objectionable: that each sepoy continues to have his own latrine in his own little court-yard, and that he is not at all particular in getting it cleaned out: that the water-supply is still very indifferent, and so on. Of course it is all right and proper for each Regimental Surgeon to mention these things in his annual report to his immediate superior, and the latter may consider it advisable to forward it on to the Head Medical Office, but there can be no advantage in hampering the pages of the General Medical Report of the Army with them. When there are two or more regiments in one station we have two or more

similar doses of the "climate," and "diseases of the district," and "state of the crops," and "natural features of the surrounding country," &c., &c., all in the same volume. The reader must be very patient, and must have more time at his disposal than is common in this country, who is willing to go through all this. In some of the executive reports there are Medical cases, and long accounts of malingering sepoys. We think that if these were worth printing, their proper place would be the pages of this Journal, where also they would have a better chance of being read and appreciated. Our opinion is that any new or useful information contained in the Regimental reports might very well be embodied in the Administration Reports of the Deputy Inspector Generals. We would thus have a very readable pamphlet of forty or perhaps fifty pages.

Having ventured to state what we consider to be the defects of the Report, we have much pleasure in drawing attention to some of its great merits. Chief among these are the "Diagrams to illustrate the chief meteorological phenomena and the fluctuations of the principal forms of sickness amongst Native Troops, during each month of 1870 in the stations of Madras, Bangalore, Secunderabad, and Trichinopoly." These are perfect models. By means of coloured bands and shading one sees at a glance the direction of the prevailing winds, the average height of the barometric column, the rainfall, the atmospheric humidity and the mean daily range of temperature for each month in the year. Coloured lines readily indicate the mean temperature, the general sickness and the prevalence of diarrhœa, dysentery, fever and cholera throughout the year. With so much information thus condensed there is no confusion. All is laid down with beautiful clearness. With reference to these Mr. Balfour writes that "it is purposed to continue these illustrations

from year to year in future Reports, as they will form graphic permanent records of the health and climate of head-quarter stations, and may, in course of time, throw additional light on the influence of the elements of climate singly or collectively, on health." It is almost impossible to suggest any improvement on these diagrams. A band or line indicating the velocity of the wind might perhaps be added with advantage. Seeing that the thermometer in the shade in May rises to 108° in Secunderabad, while the air is at the same time excessively dry and the rain-fall almost nil, one would be glad to see at the same time what the velocity of the wind is likely to be. A fresh breeze with cuscus tatties would make the place tolerable to live in. On comparing the different diagrams, difference of climate and disease are very obvious: for example the small mean daily range of temperature in Madras as compared with Secunderabad, and its large proportion of atmospheric humidity as compared with Trichinopoly. Turning over the pages of the Report we come to a map of Mysore showing the prevalence of cholera according to a plan adopted by the Sanitary Commissioner, the comparative prevalence of the disease in the several districts of the province being indicated both by deepening shade of colour and by figure giving the death rates per 10,000 of the estimated population. The Report of the Deputy Inspector General of the Mysore Division is well characterised by Mr. Balfour as able and interesting. The last chapter of it, headed "Regimental" contains abundant remarks on the Regiments and Regimental Hospitals under his charge. So full are they that we think the reports of the Medical Officer attached to these Hospitals, which occupy about fifteen pages, might well have been left out altogether. Referring to the vexed question of the spread of cholera Mr. Ran-

king writes that "the disease in fact moved so capriciously that it is impossible to say whether it was propagated along the main line of intercommunication or by prevailing winds." A perusal of this Report shows only too plainly that very little of any material consequence has yet been done to improve the sanitary condition of the Madras sepoy. The native lines are merely "drained by open ditches" which absorb filth and are sources of disease, and, as Mr. Ranking writes, "until drainage and sewerage of our cantonments and lines of regiments is effected by impermeable drains, it is scarcely to be expected that any material reduction will be effected in diseases of the diarrhœal type." Then there is no guarantee that the sepoy drinks sound water. He gets it as he may from uncovered wells and tanks in the neighbourhood of his lines.

The Surgeon of the Sappers and Miners in Bangalore has obtained some novel results in Vaccination. "In 108 vaccinations of sepoys who had marks of previous small-pox, 84 were successful: in 98 who had *good* marks of previous vaccination, 77 proved successful; and of 67 men who had marks both of smallpox and previous vaccination 44 were successfully re-vaccinated. These results are contrary to ordinary belief, to say the least of it, and we are glad to know that the Inspector General has ordered a repetition by others of the experiment.

On the subject of Fever there are some interesting remarks in the Report of the Deputy Inspector General at Secunderabad. He writes that the prevailing fever there appears to be due to cold and wet rather than to malaria, as it is most common after the south-west monsoon has fairly set in and the ground is soaked with rain, and it usually yields to simple emetics and salines followed by tonics, without the aid of quinine. One of his executive officers ventured, for these reasons, to

class 278 cases of fever that occurred in his Regiment under the heading Febricula. His superiors, however, replaced them under Fever, remittent and intermittent, on the ground that "no line can be drawn between them and the more regular form of ague." This is a subject that has yet to be worked out. This difficulty in naming many cases of fever occurs in other stations besides Secunderabad, Madras for example.

In 1870 the rainfall was generally above and the temperature below the average. Crops were abundant, and the sepoys had consequently plenty to eat. The strength of the army was about 31,000, of these about four-sevenths were Hindoos, three-eighths Mahomedans, and the remainder, about one-sixteenth, Christians. The health of the army was about the average. The ratio of treated to strength was 11·10 per cent. The corresponding ratio for prisoners during the year was 73·5 per cent., whilst that for European troops throughout the Presidency amounted to 148·15 per cent. The total mortality during the year was 411, or about 13 per 1,000 strength. There were very few deaths from cholera. The sickness and mortality varied within very wide limits in the different divisions in which the troops were stationed. Thus the Southern Division was the healthiest, with a ratio of sickness to strength of only 36 per cent., and a mortality of 8 per 1,000, while in Hong-Kong the percentage of sick was 138 and the mortality 30 per 1,000. "The most unhealthy command on the continent of India, in which Madras troops were serving, was Saugor, in the Bengal Presidency. The great seasonal and diurnal variations in temperature which obtain there have proved very trying to the Madras sepoy, and the chief cause of sickness in the regiment was fever of various types. The climate of Hong-Kong is also a trying one for Madras troops owing to malarial

" influence, as also the low winter temperature, 52°
" Fht., and the great annual fluctuations of the
" thermometer amounting to no less than 33·5° Fht.
" The diseases from which the 29th Regiment chiefly
" suffered there during 1870, were fever and bowel
" complaints. In the moist relaxing climates of Pegu,
" and the Andaman and Nicobar islands, and in the
" Straits also, the health of Madras corps rapidly
" deteriorates; dysentery, diarrhœa and rheumatism
" being the most common complaints."

FOOD IN BESIEGED PARIS.

M. Bouchardat has published in a French periodical a short paper *De l'alimentation azotée pendant le siége de Paris,* which contains some of the results of very exceptional experience in the matter of animal food. The two points to which he calls especial attention are; (1) the quantity of nitrogenous food necessary for the support of life, and (2) the modifications produced in the excretions and the flesh of animals by a radical change of diet. When the question of rationing the population arose, the author put forward the proposition that it is easier to preserve health, during a tolerably long period, under a reduced supply of nitrogenous or plastic food than when calorific aliment is diminished; this being especially true when the weather is very cold. He did not, of course, apply this principle to the case of adult males under circumstances of physical exertion, the soldiers engaged in defending the city for instance. For such men a complete dietary was enjoined. The absolute amount of azotized food, generally laid down as necessary in 24 hours for the maintenance of health, is such a quantity as contains 21 grams (324 grs.) of nitrogen. M. Bouchardat seeks to show that this quantity is unnecessarily large and that less

may be supplied for a considerable time, provided that the calorific element of the food be sufficient and properly regulated in amount. Thus 100 grams of meat in its ordinary condition contain approximately 3 grams of nitrogen. If nothing but meat is eaten, therefore, 700 grams would be necessary in 24 hours in order to supply 21 grams of nitrogen. About two kilograms of bread would be required for the same purpose ; or, if the diet be mixed, 1 kilogram of bread and 350 grams of meat. Experience seems to show that nitrogenous food is in excess in such a dietary. Previous experiments had shown the possibility of a carnivorous animal's living for more than a year on food so little azotized as beef-fat with cellular tissue : and clinical experience corresponds with the conclusion thus indicated. Cases occurred in which the stomach rejected all food except milk. The patients were put upon a diet consisting exclusively of cows' milk and kept on it for two or three months, the mean daily supply being three litres. Not only did they not lose weight under this regime, but they recovered strength and condition. Now a litre of milk contains about 30 grams of nitrogenous matter (casein, albumen, &c.), and 3 litres supply only 15·5 grams of nitrogen instead of 21. "During the siege we were reduced to a ration of 60 grams and subsequently to 30 grams of horse-flesh ; I confess we lost a few kilograms in weight, but the health of vigorous persons not exposed to other privations (especially cold) was unaffected."

If the proportion of albuminate necessary for the daily food be calculated from the amount of nitrogenous excretions, it will appear that the quantity of the latter may be diminished considerably by changes in the food without injury to health. In Paris a man in health, suitably fed, excretes between 25 and 30 grams of urea in 24 hours. The urine of

several persons who had come to Paris from tropical climates (Brazil, Java,&c.) was examined and yielded no more than 15 grams the quantity sometimes being so low as 12 : the diet corresponding to these amounts, and the foreigner being in good health. After from four to six months' residence in Paris the proportion of urea rose. These facts clearly show that the amount of nitrogenous food daily taken may be diminished without ill effect. The author has also arrived at the conclusion that many men who are in the decline of their vigor ought to reduce the amount of albuminate food when not engaged in severe physical work and when the respiratory movements are becoming languid, so that the volume of air passing through the lungs is sensibly diminished. Under such circumstances the abuse of nitrogenous aliment gives rise to numerous diseases. Digestion is disturbed. The breath becomes offensive and many chronic affections of the digestive organs are set up or slowly aggravated. If digested and absorbed, the nitrogenous matter, when excessive,forms unhealthy products in the blood and in the organs, sodium urate and calcium oxalate for instance, in larger quantities than can be eliminated ; whence gout, gravel and calculus result. Grave cerebral affections, apoplexy, hemiplegia, softening of the brain, are rare among the sober peasantry, who have not given up severe agricultural labor in their maturity or in their declining years. These diseases are unknown amongst the monks of La Trappe who are vegetarians. These facts shew that excess of nitrogenous food is a probable predisposing cause of cerebral hœmorrhages. The surest means of producing emboli in the minuter ramifications of the cerebral vessels is to favor the genesis of insoluble compounds in the blood, which the kidneys and other excretory organs are unable to eliminate. In practice patients threatened or at-

tacked with cerebral congestions should diminish the ingestion of nitrogenous food; and in such circumstances the frequent use of purgatives is indicated and practised on the same principle. Although, however, there is good reason to attribute serious consequences to the abuse of albuminate food by elderly and old persons, it is not to be supposed that young men, growing or working hard, should practise such abstinence in this respect as the exigencies of the siege compelled Parisians to undergo.

As regards the second point, some remarkable observations were made upon the modifications of which the flesh of carnivorous or omnivorous animals admits when deprived for some time of animal food and converted into granivora. The urine of a rabbit, fed for eight days on gluten bread exclusively, was completely changed in character, having become in color, odor, density, acid reaction and abundance of urea, identical with lion's urine analysed by Vauquelin. On several occasions both in Paris and in Algeria the attempt was made to feed pigs with flesh from the knackers' yards. Slaughtered after having had no other food for some time, the fat was anything but agreeable to the taste, the oleine predominating in it; the flesh was little better, was in fact disgusting. The speculation had to be given up or modified by adding a large proportion of potatoes to the meat. It was attempted to feed fowls with similar meat, or with worms, maggots, and the pupæ of silkworms; but it was found that the flavor of their eggs "laissait beaucoup á desirer," and their flesh was far from appetizing. A mixed diet, not one exclusively animal, was necessary to render either eggs or flesh agreeable. The Montfaucon rats, whose food had been dead horses,&c. (until these became useful to their betters,) gave off an offensive odor when they were caught, of

which their muscles and all other parts partook. Lasseigne found in them calculi of oxalate of calcium, undoubtedly due to the transformation of uric acid into urea and oxalic acid. During the siege most of the domestic carnivora—cats and dogs—were fed, in consequence of the scarcity of more suitable substances, upon a diet approximating closely to that of granivora. Like their masters they had to put up with soup made with oil and siege-bread. The rats, too, had nothing but vegetable products to eat, all bones and other animal refuse being carefully collected and utilized. The results of this change of diet were that the urine lost its characteristic odor and their flesh, in taste and appearance, came to be like that of the animals ordinarily used for food. "How many women habitually fastidious accepted, instead of legs of mutton, legs of big bull dogs, and tom-cats of the gutter for choice rabbit! Rat-flesh was unsurpassable, and careful cooking rendered fear of trichinæ chimerical."

HAMMOCKS ON MARCH.

In a country like India, where the distinctions between races and religions are so marked and numerous, the maxim that the British Government holds this country "by the sword." is one which has numerous adherents and which, in our opinion, cannot be gainsaid. Such being the case, therefore, it is but natural that the Government should use their best endeavours to maintain the agents whereby their power is thus upheld in the land, in a condition of thorough efficiency and serviceableness; to provide that the meat and drink dispensed to them be of an unadulterated and nourishing description; and to see that the shelter afforded them against the adverse agencies of extreme heat or cold, damp

and malaria, be such as the most approved laws of hygiene require for the soldier in garrison. These requirements have of late years more particularly attracted the attention of the controlling authorities, and to this fact the present excellent system of our Commissariat arrangements, and the lofty, well-ventilated and cool barracks that have been constructed and are now under construction at our principal military stations bear testimony. From the latter, however, it must be understood that we except, *in toto*, the paltry structures lately run up at Allahabad, Jubbulpoor &c., and that we refer solely to such as have seen the light of day and withstood the brunt of the monsoons at stations such as Bellary, Bangalore, Trichinopoly and Cannanore. But whilst the soldier in garrison is thus well cared for in every particular, the arrangements that obtain for providing him with suitable shelter whilst on the line of march are, in our opinion, capable of vast improvement. In the matter of food and drink, our Commissariat Department is generally equal to the calls made upon it; but when the wearied soldier, at the close of his march and labours for the day, throws himself down to rest and recruit his frame for the succeeding day's exertions, he might find a more comfortable and invigorating resting place than that at present provided for him by the orders of the Government whose authority and power he but lives to uphold.

Our attention has been more particularly drawn to this subject by meeting with a Government General Order of July 1871, to the effect that "if the ground on the line of march cannot be made sufficiently smooth, or if the ground be unavoidably damp, the Commanding Officer is allowed to issue, on certificate from the Medical Officer, an extra quantity of straw per day for bedding to each European soldier." From this it would appear that a little straw is always allowed, with the soldier's blanket or greatcoat over

it, as a bed ; but apart from its vermin-harbouring and perishable nature, why we ask should such a bulky, and, in very many districts, expensive Commissariat article be used at all for this purpose ? And why again should the Medical officer be hauled in to give evidence as to whether the ground is sufficiently damp to need this extra dole of straw? Are his senses of smell and feeling supposed to have been cultivated to a pitch beyond that of the Commanding officer or the Quarter-master attached to the Regiment ? The straw that forms under the present system the interposing medium between the body of the soldier and the ground might, we consider, be altogether dispensed with for all the material good it effects. The very fact of lying on the ground is one that militates against the enjoyment of a thorough and satisfactory rest ; and in countries, such as Rajpootana and Central India, Bellary and Cuddapah, where the sun's rays act with fearful intensity upon a volcanic soil, we feel convinced that no benefit can result from placing the wearied human frame in juxta-position with the ground. This much at least we can assert, after learning of the experience of those who have tried it, that instead of rising refreshed from a night bivouac upon the bare ground, an additional feeling of langour, coupled with a disinclination for mental or physical exertion, is the invariable consequence. Starting with these premises, therefore, it seems to us a natural deduction that the human body should, when in a state of repose, rest upon a comfortable and yielding material placed at a slight elevation above the ground surface. The American Indian in his forests, the untutored inhabitant of the Hill Ranges in Southern India, the bushranger in the backwoods of Australia, and even in the plains of some malarial districts of this country, the hardy ryots themselves, put into practice what we are now endeavouring to

advocate on behalf of the European soldier. The ordinary trestle-cot, apart from the limited accommodation afforded by the usual pattern of tent, would be, from its bulk and weight alone, unsuited as an article of camp equipage, whilst on the other hand, the sailor's ordinary canvass hammock would form an excellent substitute and fulfil at the same time the requirements of a satisfactory and comfortable resting-place for the tired soldier. The manner in which the men occupying each tent would lie, should be exactly similar to that now adopted, viz., with their feet to the pole and heads towards the circumference of the tent. At an elevation of twenty inches above the foot of the pole an iron band encircling it, and provided with hooks corresponding in number to that of the men allotted to occupy the tent should be fixed. To these hooks one end of each hammock should be attached, whilst the other end should be fixed to the iron peg employed for McGwire's muster of hammock, and belayed in similar manner. When the tent is struck, the hammocks are to be drawn up through a pully arangement at the top of the pole, so as to lie up close against the latter, and over this may come the usual gunny bag covering. On pitching the tent, the hammocks would be once again let down, the pegs at their heads driven in and the tent ready for occupation. The diameter of the tent to be provided with these hammocks should be at least 14 feet. We commend these suggestions to the earnest attention of the authorities, relating as they do more particularly to the well-being and comfort of our soldiers at a time when they are more liable to fall sick, and thereby entail additional labour and anxiety upon those who have the immediate care of them.

RELATIVE RANK.

We print in our Medical Intelligence, as a small contribution towards the improvement of the Official Army List, a specimen of what a Gradation List ought to be. We never were, ourselves, particularly sensitive on the score of relative military rank or ambitious of that advancement in the military hierarchy which was, some years ago, conferred upon us, with a considerable flourish of trumpets: but as the thing is there we do not see why it should be ignored unless when it is prominently thrust under the "combatant" nose. In these piping times of peace, when batta and prize-money are dreams of the past, the substantial advantages of military rank in the case of medical officers are confined to Presidency house-rent while we are alive and Clive's Fund for our mourning widows. The former point is now tolerably well settled, but we have known two occasions on which surgeons' widows received subalterns' rate from Clive's Fund and one in which the error was corrected with extreme difficulty and many shuffling references between England and India, in consequence of the incapacity or unwillingness of the purely military mind to recognize the scale of rank laid down by the Warrant. In social matters we fear the weaker and more sensitive of our brethren must often have their tender withers wrung by the systematic trampling upon their guaranteed rights of precedence which they have to endure. It *is* galling to a dashing Surgeon-Major, conscious of no mean conversational powers and anxious to impress them on a gentle listener, to see the scanty supply of the fairer sex which Indian dinner-parties so often show told off to majors and captains and sucking civilians, while he is left unmated in the rear! Over

such suffering as this, alas! so common, we prefer to draw a veil.

Now in the Madras Army List "published by authority," there has not been until within the last few months the faintest trace of the fact that medical officers are military officers with definite military rank. The innovation consists in stating, at the head of each sub-division of the Medical Establishment, the relative rank to which it corresponds; and even this will, no doubt, prevent future trouble in such matters as the pensions from Clive's Fund. We find a "Gradation List of the Bengal, Madras, and Bombay Armies," a "Gradation List of Officers on the Madras Establishment," a "List of Retired Officers of the Madras Presidency above the rank of Captain." Medical officers are "Officers," but we look in vain for any of their names in any of these Lists. But in another List of Retired Officers the absurdity reaches the climax of grotesqueness. Here retired medical officers, many of whom rank as Brigadier-Generals, and scarcely one of whom is below a Major, are arranged alphabetically in a list of Captains and Subalterns!

Our humble Gradation List is only offered as a hint to the combatant compilers of Army Lists. It does not profess to be complete, even for officers of the rank of major, our brethren of the British Medical Service not being included: but it shows, as we conceive, what Gradation Lists of military officers ought to be.

DR. HOOKER AND MR. AYRTON.

"Hyperion to a satyr" is the quotation which the juxta-position of these names suggests. We have been favored with a perusal of the indignant protest forwarded to Mr. Gladstone by the leaders

of Physical Science in England. It is a very plain-spoken and yet temperate paper, and, making every allowance for its being an *ex parte* statement of the case, it displays an amount of arrogant insolence and contempt for scientific reputation on the part of the First Commissioner of Works, eminently characteristic of the gentleman who began his official career with a public sneer at "sculptors, architects and gardeners." We trust that the issue of a contest between Mr. Ayrton, backed by the generous but necessarily half-hearted support of Mr. Gladstone (whose tolerance of his subordinate is a psychological curiosity), on the one side, and Dr. Hooker, supported by the sympathy of every student of Nature and of almost every educated person in the civilized world, on the other, cannot be doubtful. The viper in the fable found that he was biting a file and desisted; let us hope that Mr. Ayrton will find a "gardener" a harder subject than an "architect." At the worst the scientific world would not lose Dr. Hooker; but his separation from Kew, which he and his father have made what it is, would be more than a merely national calamity. Better even to lose Mr. Ayrton from the Ministry.

REVIEW.

On Antisepticity in Surgery. [By EDWARD LUND, F.R.C.S., Lecturer on Anatomy, and one of the Surgeons to the Manchester Royal Infirmary.

Mr. Lund has presented us in this pamphlet with a *brochure* on the antiseptic treatment of Wounds, Abscesses and Ulcers. Starting with the motto "Keep the wound clean," he proceeds to discuss the very pertinent query, "Cui bono pus?" This pus he rightly regards as useless and injurious, because the result of putrefactive changes in the fluid exuded, in the reparative efforts of Nature, on the surfaces of all solutions of continuity. "This fluid matter," he says, "together with other secretions from such surfaces, might be styled the excreta of wounds, as serving no useful purpose in the animal economy, and as being waste unused material thrown off from the body." But we demur to the pathology of the writer. We cannot consider the term *excreta* as at all appropriate or applicable to the fluid in question and are far from believing that it serves "no useful purpose in the animal economy.' On the surface of a wound in a healthy body, when this wound is carefully treated on sound surgical principles, the exuded lymph should, in quantity and quality, suffice for the repair of the wound; and, only in those cases will the quality fail and the quantity prove excessive, when the body is unhealthy, or placed in unhygienic conditions, or the local antiseptic treatment has been defective. Again, in a subsequent page, in allusion to the formation of pus, Mr. Lund writes, "when once the vessels of any part have taken upon themselves the secretion of pus, it is most difficult, if not impossible, to control their action and to stop its further production." Here also our pathological views are at variance with those of our author. We cannot regard pus as a secretion of the vessels of any part, simply because these tubes have no secreting power.

But while taking exception to some of the pathological doctrines of the author, we hail his accession to the ranks

of those who testify to the value of Professor Lister's Antiseptic treatment. This treatment, we believe, to be one of the most valuable contributions of later days to conservative Surgery, and the experience of Indian Surgeons verifies and corroborates all that has been urged in its favor by Surgeons in the United Kingdom. Besides promoting the normal repair of wounds and ulcers, the carbolic acid treatment, as prescribed by Mr. Lister, secures a much more pure and pleasant atmosphere in surgical wards, and we were never more struck with this fact than two years ago when visiting the wards of the Clinical Professor and those of his surgical colleagues in the Edinburgh infirmary. The former presented a striking and favorable contrast to the latter in the odors which pervaded them.

In conclusion, we would, however, sound one note of caution as to the use of carbolic acid. The proclivity of the natives of this country to tetanus renders it necessary that, in cases of lacerated wounds, the solution of acid should be as weak as possible, and certainly not above one part of the acid to sixty of water.

MEDICAL MISCELLANY.

The Treatment of Enteric or Typhoid Fever. By JAMES LITTLE, M. D., Univ. Edin., M. R. I. A.; one of the Physicians to the Adelaide Hospital.

During the past three weeks an unusually large number of persons suffering from enteric or typhoid fever have presented themselves at the Adelaide Hospital, they have not come from any single neighbourhood but from various localities in and around Dublin. I therefore think the disease just now prevails somewhat extensively, and I am anxious to draw attention to its treatment, because even the last editions of the standard text-books do not, in my opinion, tell all that in the present state of our art we can do for the disease. In one important matter, as I conceive, the advice given in all of them is injudicious, a valuable means of treatment is not mentioned at all and the indications for the employment of exceptional measures are not stated with sufficient precision. Several of those I adopt are, I know, daily prescribed by other physicians in this city, and most of them I have copied from the practice or tried on the recommendation of some one else; but the opinions I now express regarding them are founded on their observed effects in my own cases, and the justification of my present description of them arises from the circumstance that they are not generally known, or, as I believe, sufficiently valued.

Next to early confinement to bed, which perhaps more than anything else lessens the severity and risk of the fever, I rank the rigid exclusion of animal broths and jellies from the food, as tending to keep the disease mild. On this point I find myself quite at variance with the text-books in which such articles as beef-tea and Liebeg's essence of meat are recommended. Dr. Hudson in his Lectures on Fever insists on the liability of all kinds of broths to increase the diarrhœa, and I cannot but attach the utmost importance to this matter, as I have repeatedly seen a patient who was passing four to six stools on a milk diet have eighteen or twenty during the day and night after he had taken beef-tea. Milk should be the chief article of diet in enteric fever. Thirsty patients sometimes object to its mawkish taste, and I generally, therefore, add ice to it, and a little lime water in cases in which it returns curdled. Junket or rennetted milk given before it has separated into whey and curd, rice milk,

custard, baked custard in small quantity, rusks and hot milk, and blanc-mange, generally afford sufficiently varied ways of giving milk. Freshly made chicken jelly is less liable than beef-tea to increase the abdominal symptoms, and I use it in those cases in which milk, even with lime water, disagrees, but in my experience such an occurrence is very rare, and when encountered is usually in a person chronically dyspeptic. For years I have made the administration of two or three cups of really good tea or coffee between daybreak and two in the afternoon a regular part of the treatment of every case of fever, unless there was in the state of the nervous system some evident contra-indication. I did this in consequence of the well-known observations of Dr. Parkes on the effect of coffee in increasing the elimination of urea in fever, and I am satisfied that both it and tea lessen drowsiness and prostration, and increase the secretion of urine; once or twice in the day they may be given, poured upon a well-whisked egg, and thereby an additional means of nourishing the patient is obtained. I agree with those who consider alcoholic stimulants in any quantity seldom needed in enteric fever.

Cold baths I have systematically employed since Dr. Cuming in his Report on Medicine in this Journal (May, 1869), drew attention to their use in enteric fever. I have not given them at such short intervals as recommended by Jürgensen and by Bartels and Liebermeister; three, or at most four are given in the twenty-four hours. In the hospital we have full-sized baths, which run on castors, one of these is brought to the bedside, half full of water at 75 ° Fahr., and if the temperature of the patient exceed 102 ° Fahr., he is lifted out and laid in the bath; he is kept in it for a period varying from five to fifteen minutes, and then quickly dried and put back to bed. The bath is usually most grateful to the patients; they often say it makes them feel strong, and after the evening bath they commonly fall into a sound sleep. I have used it with manifest benefit where cooing and wheezing râles existed in the chest, and where deficiency in the percussion resonance posteriorly and muco-crepitus indicated postural stasis in the lungs; but I have never used it when there was hæmorrhage from the bowels, or such pain as to justify the fear that peritonitis existed. There is sometimes slight chilliness in the extremities after it, and a little shivering. This indicates that the bath should not be a prolonged one, but does not forbid its use. Twice, however, I have considered it unsafe to continue the baths, once because a marked shivering followed, and once because the patient was alarmed by it. In cases in which the disease is running a mild course I only give one bath in the day, at the height of the usual evening paroxysm of fever.

By a dietary such as I have described, and by the systematic employment of the baths, I am convinced the severity and danger

of enteric fever are greatly diminished, and the occurrence of any of the serious accidents incidental to the complaint rendered very rare; but I do not believe that its duration is appreciably shortened.

Besides these means there are others which I have found of material benefit when certain conditions were present.

When during the first eight days the face is flushed and there is headache, a high temperature and a thickly coated tongue, and when the evacuations, three or four in the twenty-four hours, are neither very large nor very liquid, a dose of calomel from four to six grains, perceptibly lessens the heaviness of the fever. I have sometimes given the calomel a second time, after an interval of a day or two; but never oftener; it increases the evacuations during the twelve hours after its administration, but never in my experience sets up troublesome purging.

In enteric fever it is not uncommon to find a patient lying on his back, perceptibly impeded in his breathing, his abdomen tumid and projecting, but not markedly tender, and on inquiry it will be found either that the bowels have not acted for twelve hours, or that though the stools are frequent, only a very little fæcal matter with wind passes each time. In such a case great relief is obtained by giving a draught containing two drachms of castor oil, with one or two of turpentine. If for any reason the physician hesitates in ordering this, he may have a warm water enema administered, but the draught relieves much more completely.

In my experience poultices and fomentations have not proved so useful as their constant recommendation by authors led me to expect; their weight, and the bandaging necessary to keep them properly applied render them anything but grateful to most patients, and I now seldom employ them except when the abdomen is tympanitic, in which case the turpentine stupe is of undoubted utility.

Since I have kept my patients rigidly to the diet I have mentioned, I have not often found it necessary to give medicines to check looseness of the bowels; three or four actions in the twenty-four hours seldom do any harm; when it is necessary to interfere I have found by far the most useful remedy a pill, the use of which Dr. Hudson some years ago suggested to me, it contains one-sixth of a grain of carbolic acid, one-sixth of a grain of opium, and three grains of bismuth. This combination I have found so admirable for moderating diarrhœa and tympanitis that I have seldom employed any other; two, three, or four pills may be given during the day and night; of other remedies sulphuric acid is, I think, the best.

Hæmorrhage from the bowels is also rare when milk diet and cold baths are employed; when it occurs, gallic acid, a scruple every second or third hour, and turpentine were the remedies

upon which, until lately, I relied; in consequence, however, of the power of arresting hæmorrhage, which ergotin has recently been shown to possess, when administered hypodermically,* I some weeks ago made up my mind to try it in the hæmorrhage of typhoid, as soon as a case presented itself, and as far as the experience of a single one goes, I have reason to be well satisfied with the experiment. On the morning of the fourteenth day of enteric fever, blood appeared in the discharges of a patient now under my care in the Adelaide Hospital; when I visited her at noon I found more than a pint of clots had come away, and while I was in the ward more than half a pint of pure blood, partly clotted and partly liquid was passed, at the same time the features became sunken, and the extremities cold. I then injected five grains of ergotin, and repeated the injection at three o'clock. Within half an hour of the first injection about three ounces of blood escaped from the bowel, but none came again till four o'clock the following morning, when half a pint of clots escaped, and a third injection was used; the only other treatment employed during that day and night was the application over the ilio-cæcal region of an ice bag. There was no further discharge of pure blood; the three or four next stools were, however, blackish, and as a precaution three twenty-grain doses of gallic acid were given on each of the two following days.

There is a group of nervous phenomena sometimes present in typhoid fever, for which, I believe, the remedy is a full dose of quinine. I have seen similar symptoms occurring at the commencement of cerebro-spinal fever relieved by quinine, and was led in consequence to try it in the enteric disease. A delicate lad of fourteen, in whose case I had the advantage of Dr. Hudson's counsel, was attacked with enteric fever when recovering from a pulmonary affection; most of the febrile phenomena, though quite characteristic, were not severe, but in the beginning of the third week, although the bowels were free and the urine abundant, he became drowsy, and his breathing and pulse of the character which indicates cerebral oppression, it became difficult to arouse him sufficiently to swallow, and for several days he did not speak; a blister was applied to the nape of the neck, and turpentine with ether, and a moderate allowance of brandy given, but without marked effect on the cerebral symptoms; after these had persisted five days, he was in the following condition:—He lay as if heavily asleep, with difficulty could

* I have found the hypodermic injection of ergotin check violent hæmoptysis in acute phthisis, and arrest rather profuse hæmaturia in a case which is probably one of malignant disease of the kidney. I use five grains suspended in twenty or thirty minims of distilled water; severe pain and swelling have invariably followed the injection, and I now always throw it into the loose cellular tissue of the buttock, where it produces less suffering than if injected into the arm.

he be roused to swallow; he never spoke, and when I succeeded in getting him to put out his tongue he did not draw it back again till again aroused; he only indicated by restlessness when his bladder and bowels were going to act; his morning temperature was 104°, his respiration 52, and his pulse exactly equalled the respirations, it was also 52, and had a distinct intermission every fifteen or twenty beats; six grains of quinine were now given, and the dose repeated in twelve hours. The following morning the temperature was 101°, the respirations had fallen to 40, and the pulse risen to 68 without intermissions. A third and fourth dose of quinine were given, and the turpentine continued, and, though slowly, the cerebral symptoms disappeared, and the lad made a good recovery. I think it is probable these symptoms indicate venous stasis or serous effusion at the base of the brain; but whether this be so or not, it is necessary carefully to distinguish the condition, to which I now allude, from the cerebral oppression due to deficient secretion of urine, the most common cause of stupor in fever, and one which, of course, requires a very different treatment.

The opinions I have formed as to the best way of combatting other dangers in enteric fever, do not materially differ from those to be found in the text-books, and I will, therefore, merely state the measures which, out of the various ones enumerated in these works, I have found the best.

For delirium and wakefulness, in the early stage, leeches to the temples, and, later, provided the urine be fairly abundant, a dose of four, five, or six grains of Dower's powder will be found superior to any of the hypnotics recently introduced; headache may sometimes be temporarily relieved by the application of the vapour of bisulphide of carbon, as suggested for neuralgic headache, by the late Dr. Kenyon, but cutting the hair and leeching are the remedies for severe headache.

Nausea and persistent retching in the early days may usually be relieved by an emetic of ipecacuanha, and later on in the fever, by ice and by draughts containing ten grains of bicarbonate of soda, ten grains carbonate of bismuth, and four minims of prussic acid.

Scantiness of urine requires dry cupping of the loins, effectually performed, and the internal use of the salts of potash and the spirit of nitrous ether. The former of these measures is not, I think, adopted in fever as often as with advantage it might be; when actual stupor with suppression of urine occurs it is a remedy on which most physicians rely, but I am sure that it is often desirable to resort to it when there is merely drowsiness and confusion of mind coincident with a scanty renal secretion. A stout young woman, for whom, under these circumstances, I lately prescribed cupping, told me the next morning she felt "altogether different" after the cupping, there was conscious-

ness of amendment, a symptom of great prognostic value in fever.

Indications of more or less pulmonary congestion are very usual in enteric fever, and often do not call for interference. When there are cooing and wheezing râles, and the sleep is broken by fits of coughing a turpentine stupe at bed-time is usually sufficient to relieve. When there is any deficiency of resonance posteriorly I attach most importance to the precaution on which I first heard Dr. Stokes insist, of not allowing the patient to remain on his back, but keeping him alternately on his right and left side, supported if need be by pillows. For graver chest symptoms, turpentine, ether, and brandy are the only remedies on which, I think, any reliance can be placed.—*Dublin Journal.*

Cutaneous Absorption.

In a recent note to the Paris Academy, M. Bernard writes as follows :—

I desire to submit to the Academy an account of experiments made in the Vincennes Asylum as to cutaneous absorption in baths of medicamental vapour. In such an institution, among patients with various chronic affections, I am favourably situated for experimenting on this question on a large scale.

Reveil's memoir on the subject gives the facts which are known up to the present. "Absorption in the bath," he says, "only takes place in rare and exceptional circumstances; it is facilitated by washing the skin, continued rubbing, and by certain irritant and solvent substances."

The bath apparatus consisted of a furnace, a boiler, a chamber in which the steam coming from the boiler was charged with the substance to be applied, and a wooden cage, in which the patient was seated while enveloped in the vapour.

I used iodide of potassium in my experiments—(1), because it is not volatile; (2), because its presence in urine is easily determined by nitric acid and chloroform; (3), because, in seizing the iodine set at liberty by the nitric acid, the chloroform takes a rose colour varying in a marked way with quantity, and thus, by comparing with a graduated scale, one may determine pretty accurately, and without quantitative analysis, the quanitity of iodide of potassium in the urine.

The skin of the subjects experimented on was intact, without wound or scratch. The urine was examined before the bath was taken, and the absence of iodine ascertained. By a respiratory tube, the patient breathed the external air through his mouth, the nostrils being pinched. A thick sheet of caoutchouc was bound by a T-bandage over the anus; the penis was sheathed in the same material; while the hands and feet were wrapped in cotton and gummed taffeta.

The subject was then placed in the cage, and subjected for thirty minutes to vapour from the mixing chamber, into which there had been put 20 grms. of iodide of potassium. The temperature in the cage was gradually raised to 45°; the skin of the subject became wet. He was then wrapped in a woollen covering and put in bed, when profuse perspiration took place. The urine analysed two hours after the bath gave a rose color: some taken three hours after gave a much more lively colour; thus affording clear proof of the absorption of iodide of potassium through the skin, the only way it could have entered the system. Besides, if it had entered by pulmonary passages it would have been eliminated immediately after the bath. These first experiments, then, prove the fact of cutaneous absorption.

In a second series I sought to determine to what temperature the air, mixed with medicamental vapour, must be raised, in order to the absorption taking place.

A very sensitive thermometer was applied to the breast of the subject, and the temperature of the bath varied in the series of experiments from 30° to 38,° the time being, as before, thirty minutes. I only found the absorption take place when the temperature was 38° (or one degree above the temperature of the body). Indeed, the sebaceous matter in the cells of the epidermis only commences to dissolve at 38° when the skin is really wet; it is then that imbibition takes places, and consequently absorption. The iodide of potassium, conveyed mechanically by the vapour, penetrates the epidermis, whence it passes into the capillary blood system and the other organs.

Thus we understand how absorption does not generally take place in a water-bath. Owing to the density of the water, and its great specific heat, the temperature of such baths is usually not raised beyond 30° to 33°. Dr. Homolle remained in a bath at 34° or 35°; would he have been able to bear 38° or 39°? Besides, the liquid layer touching the skin is not constantly renewed, as in the vapour-bath.

I succeeded, however, in obtaining the cutaneous absorption at a temperature under that of the body, in the following way:—

The subject had first a simple vapour-bath, to destroy the sebaceous matter; his skin was washed and carefully dried, and he was replaced immediately in the cage, where he was exposed to the vapour of iodide of potassium for thirty minutes, the temperature of the bath varying, in several experiments of this kind, from 34° to 36°. Two hours after a bath at 34° the colouration of the urine was slightly rose; after a bath at 36° it was much more distinct.

M. Colin has described an experiment in which he allowed water charged with cyanide of potassium to fall for five hours' time on a horse's back. This caused the death of the animal; the

sebaceous matter having been destroyed through percussion, and cutaneous absorption taking place.

In the sand-baths at Cette and Arcachon, which are found so efficacious for scrofulous affections, tumours, &c., what takes place? The temperature being considerably above that of the body (over 40°), the skin is wet, the sebaceous matter dissolves in the perspiration, and there follows absorption of the salts contained in the sand.

I have not been able to find free iodine in the urine; the use of nitric acid has always been necessary. Besides iodine once introduced into the system soon forms various compounds.

In summing up his results, M. Bernard further mentions that the elimination of the salt, commencing two hours after the bath, increases in quantity till a meal is taken, after which it diminishes (probably because of the water received into the system). and then again increases. It ceases completely twenty-four hours after the bath, whatever the amount of the salt, the temperature, or the duration of the bath.—*Chemical News.*

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*Dr. Boggs on Eucalyptus Globulus as a substitute for Cinchona preparations.**

I believe that the new substances extracted from the *Eucalyptus Globulus* will play an important part in Therapeutics. I do not propose to enter into every detail of the medicinal properties of this magnificent tree, for they have been already ably described by Professor Gubler. I desire merely to draw attention to some of its properties as yet little known. Besides its application as a febrifuge, it is used in all cases in which antispasmodics are indicated, and advantage has been taken of this property to use the drug as a substitute for *Datura stramonium.* Thus, in England the leaves have been employed in cigarettes as a remedy for asthma, and in all cases complicated with pain and insomnia.

Experiments have shown that all parts of this gigantic tree, the leaves, the bark, are impregnated with febrifugal properties. According to analyses which have been made, a substance has been found in them identical with the salt of quinine which is found in cinchona, and which behaves similarly with strong acids; and where it is combined with sulphuric acid a crystallized salt is formed completely analogous to sulphate of quinine. To make sure of the resemblance between these two salts, experiment has been advanced farther and the result of a combination of chlorine and ammonia with the Eucalyptus salt was exactly

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* Letter to the Editor, Journal des Connaissances Médicales.

the same as with quinine, that is to say, a green coloration was produced.

An attempt has been made to acclimatize this tree in Austria; but it was found that its medicinal properties were much less strongly marked than in its native country. Nevertheless it was established that it was most serviceable in certain obstinate cases of intermittent fever in which even quinine had failed. It was observed, besides, that the duration of treatment was less under Eucalyptus than under quinine; and that of all preparations the tincture appeared to be the best, because it contains, besides the extract (which is like the resin of cinchona and which, consequently includes the active principle of the tree); an essential camphorated oil. This tincture, having an aromatic odor is very pleasant to take, especially with simple syrup or syrup of oranges. In trifling cases two or three tea-spoonsful immediately before the paroxyssm are sufficient to suspend it: but when the fever is attended with cachexia, it should be administered in small doses, morning and evening, for some time. As the therapeutical action of this tree is analogous to that of the cinchona the salt or active principle of the Eucalyptus, as well as its other parts are exhibited in the same doses and in the same form as corresponding doses of cinchona. The distilled water of the Encalyptus supplies, besides, an agreeable vehicle for a crowd of medicines, stimulants especially. We have, therefore, a true substitute for cinchona, the price of which is always high and the supply of which threatens to fail. To be prepared for such a calamity it would be desirable to search for other plants besides cinchona which contain quinine.

MEDICAL INTELLIGENCE.

Gradation List of Officers of the Madras Army of the rank of Major as they stood on the 30th June 1872.

Rank.	Names.	Corps.	Date of Rank.
M.	F. W. Gregory	44th F.	15th Feb. 1861.
,,	J. Penton	89th F.	5th April 1864.
,,	S. H. E. Chamier	R. A.	11th Oct. ,,
S.	J. M. Joseph, M.D.	M. E.	14th Dec. ,,
,,	E. S. Cleveland, M.D.	,,	,, ,,
,,	W. H. Harris, M.D.	,,	13th Feb. 1865.
,,	W. H. Rean, M.D.	,,	14th May ,,
M.	F. Cobbe	R. A.	14th June ,,
,,	B. L. Forster	,,	12th July ,,
S.	H. T. Shaw	M. E.	10th Sept. ,,
,,	A. Sanderson, M.D., M.A. ...	,,	20th October ,,
,,	C. Cooper, M.D.	,,	20th Nov. ,,
,,	J. McDonald, M.D., F.R.C.S.E. ...	,,	14th Feb. 1866.
,,	S. J. Wyndowe, M.D.	,,	24th March ,,
,,	W. R. Cornish, F.R.C.S.	,,	1st April ,,
,,	J. S. Morton, M.D.	,,	10th June ,,
,,	A. H. Beaman	,,	10th ,, ,,
,,	J. P. Nash, M.D.	,,	20th ,, ,,
M.	E. G. Campbell	S. C.	11th August ,,
S.	G. S. W. Ogg, M.B.M.A.	M. E.	12th Sept. ,,
S.	J. Shortt, M.D.	M. E.	20th ,, ,,
M.	F. C. D.'E. Barclay	24th F.	29th October ,,
,,	C. M. Playfair	R. A.	11th Dec. ,,
,,	A. H. Cooke	S. C.	11th ,, ,,
,,	R. V. Handyside	,,	12th ,, ,,
,,	W. O. Swanston	,,	20th ,, ,,
,,	W. H. R. Godfrey	,,	do. ,, ,,
,,	C. M. Hailes	,,	do. ,, ,,
,,	A. D. Glay	,,	do. ,, ,,
,,	C. D. Clementson	,,	26th ,, ,,
,,	A. Gahagan	,,	26th ,, ,,
,,	C. F. J. Skottowe	,,	26th ,, ,,
S.	D. C. McAllum, M.D.	M. E.	30th ,, ,,
M.	G. Kallender	S. C.	2nd Jan. 1867
S.	W. N. Chipperfied	M. E.	3rd ,, ,,
M.	A. C. Lilly	S. C.	20th ,, ,,
,,	H. Fraser	S. C.	20th ,, ,,
,,	W. Munro	S. C.	20th ,, ,,
,,	W. H. P. G. Bluett	10th Foot.	22nd ,, ,,
S.	W. Pearl	M E.	24th ,, ,,

Gradation List of Officers, &c.—continued.

Rank.	Name.	Corps.	Date of rank.
S.	G. Marr, A.M. & M.D.	M. E.	24th Jan. 1867.
,,	W. Doyle, M.D.	,,	24th ,, ,,
,,	E. E. Lloyd	,,	24th ,, ,,
,,	T. Lowe	,,	24th ,, ,,
M.	C. M. White	S. C.	26th ,, ,,
,,	R. K. Macquoid	,,	26th ,, ,,
,,	C. A. McMahon	,,	4th Feb. ,,
S.	M. C. Furnell, F.R.C.S.	M. E.	7th ,, ,,
M.	C. S. B. Walton	S. C.	20th ,, ,,
,,	J. Woodcock	,,	1st March ,,
,,	M. K. Bourne	,,	13th ,, ,,
,,	G. B. Bowen	,,	17th ,, ,,
,,	G. L. Griffin	45th F.	19th ,, ,,
,,	P. P. L. Stafford	S. C.	20th ,, ,,
S.	G. A. Burn, M.A.	M. E.	30th May ,,
M.	C. Raikes	R A.	11th June ,,
,,	W. S. Drever	S. C.	11th ,, ,,
,,	J. R. S. Henderson	,,	30th ,, ,,
,,	I. V. Morris	,,	26th July ,,
S.	T. Croudace	M. E.	4th Aug. ,,
,,	R. Dempster	,,	4th ,, ,,
,,	J. Houston, M.D.	,,	4th ,, ,,
,,	H. E. Busteed, M.D.	,,	4th ,, ,,
,,	H. Crocker, M.D.	,,	4th ,, ,,
,,	R. Arnold	,,	4th ,, ,,
,,	H. Adam	,,	4th ,, ,,
,,	W. H. Morgan	,,	4th ,, ,,
M.	C. Barton	18th H.	14th ,, ,,
,,	R. C. A. Marshall	S. C.	20th ,, ,,
,,	A. R. McMahon	,,	20th ,, ,,
,,	T. W. Stansfeld	,,	21st ,, ,,
,,	A. H. M. Dickey	,,	21st ,, ,,
,,	W. H. White	,,	22nd Sept. ,,
,,	G. E. Bulger	10th F.	6th Nov. ,,
,,	J. B. Swete	R. A.	10th Dec. ,,
,,	C. L. Pereira	,,	10th ,, ,,
,,	C. J. Smith	,,	10th ,, ,,
,,	E. L. Hankin	,,	10th ,, ,,
,,	H. E. Ryves	,,	11th ,, ,,
,,	P. Salter	,,	11th ,, ,,
,,	S. C. Montgomerie	,,	11th ,, ,,
,,	B. J. C. Prior	,,	20th ,, ,,
,,	H. T. Duncan	,,	20th ,, ,,
,,	C. C. Minchin	,,	20th ,, ,,
,,	D. Shaw	,,	8th Jan. 1868.
,,	O. Morgan	,,	11th ,, ,,
,,	J. Duval	,,	11th ,, ,,
,,	R. S. Burge	,,	11th ,, ,,
S.	H. King, B.A., M.B.	M. E.	11th ,, ,,
M.	A. T. Baldwin	,,	13th ,, ,,
,,	F. A. Fenton	,,	20th ,, ,,

Gradation List of Officers, &c.—continued.

Rank.	Name.	Corps.	Date of rank.
M.	J. Allardyce	S. C.	20th Jan 1868
,,	H. Norris	2 C. L. S.	20th ,, ,,
,,	R. Farrer	S. C.	20th ,, ,,
,,	A. G. Duff	36th I.	20th ,, ,,
,,	R. H. Beddome	S. C.	20th ,, ,,
S.	B. Williamson, M.B.	M. E.	30th ,, ,,
M.	G. A. Arbuthnot	8th Ca.	5th Feb. ,,
,,	A. Templeman	21st Foot.	15th ,, ,,
S.	G. Bidie, M.B.	M. E.	20th ,, ,,
,,	J. G. Reed, M.D.	,,	20th ,, ,,
,,	J. Henderson, M.D.	,,	20th ,, ,,
,,	H. M. Ross, M.D.	,,	20th ,, ,,
,,	C. T. Eves	,,	20th ,, ,,
,,	J. S. Ridings, M.D.	,,	20th ,, ,,
,,	J. J. Heffernan	,,	20th ,, ,,
,,	D. W. Trimnell	,,	20th ,, ,,
M.	A. B. Cumberlege	C. S.	25th ,, ,,
,,	W. M. Parratt	,,	25th ,, ,,
,,	D. Standen	,,	25th ,, ,,
,,	R. S. J. Prendergast	2nd C.	20th March ,,
,,	J. E. Baillie	S. C.	20th ,, ,,
,,	B. F. Heysham	,,	3rd April ,,
,,	G. F. Gildea	21st F.	14th ,, ,,
S.	C. A. Andrews	M. E.	25th ,, ,,
M.	W. H. G. Palmer,	S. C.	9th June ,,
,,	W. Hands	,,	9th ,, ,,
,,	T. L. Scott	,,	9th ,, ,,
,,	G. De la P. Beresford	,,	10th ,, ,,
,,	S. Galbraith	,,	10th ,, ,,
,,	W. Osborn	,,	10th ,, ,,
,,	E. Hill	,,	10th ,, ,,
,,	T. T. Turton	,,	26th ,, ,,
,,	J. Hudleston	,,	3rd July ,,
S.	J. M. Donnelly, M.D.	,,	3rd ,, ,,
M.	F. M. Raynsford	S. C.	10th July 1868.
S.	J. Keess, M. D.	M. E.	24th August ,,
,,	R. Wilson	,,	24th ,, ,,
,,	R. W. Cockerill	,,	24th ,, ,,
,,	C. Robertson, M. D.	,,	24th ,, ,,
,,	A. Gamack, A. M., M. D.	,,	24th ,, ,,
,,	J. Wilkins, M. D.	,,	24th ,, ,,
M.	A. M. Davies	S. C.	55th ,, ,,
,,	G. C. Close	45th F.	15th ,, ,,
,,	W. Chrystie	Engineers.	15th ,, ,,
,,	H. P. Hawkes	S. C.	15th ,, ,,
,,	W. L. Twentyman	18th Hus.	15th ,, ,,
,,	W. J. Morris	4th C.	10th Nov. ,,
S.	T. G. Howell	M. E.	12th ,, ,,
M.	J. P. Pedler	S. C.	8th Dec. ,,
,,	T. Dyer	,,	8th ,, ,,
,,	E. A. Mottet	,,	8th ,, ,,

Gradation List of Officers, &c.—continued.

Rank.	Names.	Corps.	Date of Rank.
M.	F. J. Millar	S. C.	20th Dec. 1868.
,,	W. G. Grove	32nd Inf.	20th ,, ,,
,,	B. H. W. Magrath	S. C.	20th ,, ,,
,,	F. T. Pollok	,,	20th ,, ,,
,,	R. C. Lavie	,,	20th ,, ,,
,,	S. W. Lennox	23rd Inf.	27th ,, ,,
,,	S. New	S. C.	27th ,, ,,
,,	E. Cave	,,	27th ,, ,,
,,	W. R. Mesham	,,	27th ,, ,,
,,	J. L. Benwell	,,	20th Jan. 1869.
,,	R. B. Kennedy	23rd Inf.	20th ,, ,,
,,	G. M. Payne	S. C.	20th ,, ,,
,,	C. B. L. Smith	,,	20th ,, ,,
S.	J. Ross, M. B.	M. E.	29th ,, ,,
,,	S. T. Heard, M. D.	,,	29th ,, ,,
,,	W. A. Smith, M. D.	,,	29th ,, ,,
,,	W. F. deFabeck	M. E.	29th ,, ,,
,,	G. E. Whitton, M.B. & B.A.	,,	29th ,, ,,
,,	T. Beaumont, M.D.	,,	29th ,, ,,
M.	C. H. Beddek	S. C.	7th Feby. ,,
,,	W. Kincaid	,,	3rd March ,,
,,	W. G. M. Strickland	,,	3rd ,, ,,
,,	J. Swiney	,,	12th April ,,
,,	E. B. Sladen	,,	14th ,, ,,
,,	R. T. Snow	,,	8th June ,,
,,	H. H. Foord	,,	9th ,, ,,
,,	C. J. R. Bell	,,	9th ,, ,,
S.	W. P. Kelly	M. E.	9th ,, ,,
M.	W. Hudleston	S. C.	13th ,, ,,
,,	R. H. R. Rowley	R. A.	20th ,, ,,
,,	C. J. Richards	38th I.	13th Aug. ,,
,,	W. H. Whitlock	S. C.	23rd ,, ,,
,,	S. Hodgson	2 C.	9th Sep. ,,
,,	F. C. Trent	48 F.	18th ,, ,,
,,	F. Horsley	S. C.	20th Nov. ,,
,,	F. G. Hankin	,,	11th Dec. ,,
,,	L. H. Isacke	,,	11th ,, ,,
,,	J. O. Mayne	Engr.	11th ,, ,,
,,	C. S. Milman	R. A.	12th Dec. ,,
,,	H. D. Cloete	S. C.	12th ,, ,,
,,	H. S. Stuart	,,	12th ,, ,,
,,	F. F. R. Bishop	,,	12th ,, ,,
,,	H. C. Menzies	,,	12th ,, ,,
,,	A. T. Searle	,,	12th ,, ,,
,,	J. D. Vallance	,,	12th ,, ,,
,,	J. H. Pelle	R. A.	19th ,, ,,
,,	W. R. Johnson	S. C.	20th ,, ,,
,,	J. A. Campbell	,,	20th ,, ,,
,,	C. J. Godfry	,,	20th ,, ,,
,,	A. Drury	,,	26th ,, ,,
,,	H. F. Dakeyne	,,	20th Jan. 1870.

Gradation List of Officers, &c.—continued.

Rank.	Names.	Corps.	Date of Rank.
M.	J. Crawford	S. C.	20th Jan. 1870.
„	O. F. Smithers	„	20th „ „
„	J. W. Orr	„	20th „ „
„	A. C. Hay	S. C.	20th „ „
„	F. Gadsden	„	21st „ „
S.	H. I. Beach	M. E.	27th „ „
M.	R. A. W. C. Stuart	17th I.	16th Feb. „
„	P. A. Carnegy	S. C.	16th „ „
„	H. G. Thomson	„	22nd „ „
„	G. J. D. Heath	„	3rd March „
„	M. B. S. Lloyd	„	18th „ „
„	J. S. Tighe	„	22nd „ „
„	E. D. Faistlough,	48th F.	1st April, „
S.	J. M. Miller, M. D.	M. E.	13th „ „
M.	G. C. Bartholomew	10th F.	11th May „
„	A. F. F. Bloomfield	S. C.	25th „ „
S.	W. Jarquhar, M. D.	M. E.	28th „ „
„	J. Law, M. D.	„	28th „ „
M.	G. F. Blair	R. A.	14th June „
„	F. L. Playfair	S. C.	14th „ „
„	G. V. Law	„	14th „ „
„	T. R. Church	„	14th „ „
„	H. M. Nepean	„	15th „ „
S.	W. Fry	M. E.	29th „ „
M.	J. H. Tripp	76th F.	12th July „
„	H. C. Wilkinson	16th Lan.	13th „ „
„	A. C. Forth	S. C.	20th „ „
S.	W. J. Busteed, M.D.	M. E.	23rd „ „
„	W. F. Davis, M.D.	„	23rd „ „
„	J. M. Houston, M.D.	„	23rd „ „
„	W. H. Roberts, M.D.	„	23rd „ „
„	J. Murray, M. D.	„	23rd „ „
M.	J. Bayley	16th L.	27th „ „
„	C. A. Benson	45th I.	9th Aug. „
„	W. G. Morris	1st C.	11th „ „
„	W. G. M. Crawford	24th F.	1st Oct. „
„	H. C. B. Barnett	S. C.	10th Feb. 1871.
„	W. G. Ward	„	10th „ „
„	G. C. Hodding	„	10th „ „
S.	J. Bilderbeck	M. E.	10th „ „
„	R. E. Pearse	„	10th „ „
„	G. D. Riddell	„	10th „ „
„	E. M. Ross	„	10th „ „
„	J. Dougall	„	10th „ „
M.	E. Feneran	48th F.	14th March „
„	C. T. Caldecott	76th F.	4th April „
„	C. S. Steward	4th Cav.	11th May „
„	E. W. Childers	R. A.	13th June „
„	T. I. M. Hog	„	13th „ „
„	R. H. Cunliffe	S. C.	13th „ „
„	H. Watson	„	13th „ „

Gradation List of officers, &c.—continued.

Rank.	Names.	Corps.	Date of rank.
M.	R. S. Gray	S. C.	13th June 1871.
„	E. M. Norie	„	16th „ „
S.	B. T. Suffrein	M. E.	27th July „
„	I. F. Barter	„	27th „ „
„	J. FitzGerald	„	27th „ „
„	A. Fergusson, M. D.	„	27th „ „
„	H. Griffith	„	27th „ „
M.	A. W. C. Lindsay	S. C.	26th Aug. „
„	F. D. Walters	44th F.	9th Sept. „
„	S. H. Clerke	21st F.	31st Oct. „
„	J. M. Williams	Inf.	15th Nov. „
„	R. C. Stewart	8th C.	14th Dec. „
„	E. D. Gompert	S. C.	20th „
„	G. J. F. Begbie	„	20th Jany. 1872.
S	G. Williamson, M. D.	M. E.	20th „ „
„	C. R. G. Parker	„	20th „ „
M.	J. C. W. Bruce	48th I.	20th Feb. „
„	W. Robertson	S. C.	20th „ „
„	E. H. R. Chambers	„	26th „ „
„	R. A. Walters	„	11th April „

(General Orders by the Commander-in-Chief.)

Officers' Mess—Troop Ship.

No. 70.

2nd August 1872.

Under instructions from the Right Honorable the Secretary of State for India, officers proceeding home by Her Majesty's troop ships are directed to provide themselves, before embarking, with sufficient funds to pay for their messing during the voyage.

Transport—Passage—Insanes.

No. 89.

With reference to G. O.* No. 214 of 1871, "Passage—Insanes," and Clauses *h*, *i*, and *j*, para. 241, Transport Regulations, Part I., the attention of the Right Honourable the Commander-in-Chief has been called to the fact, that from certain commands during the past season, insanes requiring attendance were despatched to Bombay as invalids, without any special arrangements for attendance, or report to secure

* Madras G. O. C. C. 29th November 1871, page 355.

proper provision for their accommodation at Deolalee or on boardship.

2. Insanes are never to be despatched as ordinary invalids. On all occasions when passage is required for insanes, a special report is to be made to Army Head Quarters, and instructions to be received as to their disposal from the Quartermaster-General.

Passages—Warrant Officers.

No. 90.

Under instructions from Government, it is notified that Warrant Officers, holding honorary commissioned rank, are not to be exempted from the operations of para. 16 of G. G. O.* No. 773, dated 22nd September 1864, which withholds passages at the public expense from officers moved in consequence of regimental or departmental promotion, or when transferred to a more lucrative appointment.

Military Department, No. 744, dated 12th April 1872, to the Quartermaster-General.

2. These officers do not therefore come within the terms of† G. G. O. No. 841, dated 31st August 1870.

† G. O. No. 236, dated 5th September 1870.

Native Medical Pupils.

9th August 1872.

No. 199 of 1872.—The following General Orders by the Government of India, are re-published :—

No. 772 of 1872.—Frequent complaints having been received of the idleness and inattention of many of the native medical pupils, who, under the provisions of paragraph 41 of G. G. O. No. 550‡ of 1868, are attached to Medical schools and colleges for the prescribed course of study, the Right Honorable the Governor General in Council is pleased to authorise the principals of schools and colleges to withhold or to withdraw the increase of pay given after the first year's residence from those Medical pupils who, from idleness or other misconduct within their own control, have failed to make due progress in their studies.

Each case in which this authority is exercised is to be reported, through the local Government, for confirmation by the Government of India in the Military Department.

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* Madras G. O G. 11th October 1864, No. 402.
† „ „ 13th Sept. 1870, No. 266.
‡ Madras G. O. G. No. 232, dated 19th June 1868.

Station Staff Surgeons.

No. 801 of 1872.—The following resolution by the Government of India in the Financial Department is published for general information :—

No. 1318, dated Simla, the 24th July 1872,

Read.—An office memorandum from the Home Department, No. 2678, dated the 26th June, forwarding for consideration and orders, certain papers regarding the remuneration to be allowed to Station Staff Surgeons of Sub-Divisional Cantonments for the performance of Civil Medical duties.

Resolution :—The Governor-General in Council is pleased to rule that a monthly allowance of Rupees 30 from provincial funds shall be made to a Station Staff Surgeon placed in charge of the Civil Medical duties of the head quarters of a civil sub-divisional officer, and that no separate fee or other remuneration shall be given to him from the civil or military department for performance of such duties.

Exchange—Officers—British Service.

No. 808 of 1872.—Under instructions from Her Majesty's Government, and in extension of the rules laid down by the Secretary of State for War, published in General Order by the Commander-in-Chief, No. 141 of 22nd June 1867, it is notified, for general information, that officers of the British service in India exchanging into or transferred to batteries or regiments proceeding to or under orders for India, and allowed to remain in India until their corps arrive, have no claim to receive any pay or allowances, from Indian revenues till such battery or corps is brought on the strength of the Indian Establishment.

Officers so circumstanced will not be placed on duty of any kind.

List of Children.

On account of whom Payments have been notified by the receipt of Paymaster's Statements, &c., from 31st July up to this date for securing the following rates of pension.

Names of Subscribers.	Children's date of birth.	Sex.	Rates of Pension secured.	To what period.	Payments how made.
G. Williamson ...	24th June 1872 ...	Female...	Full ...	To 21 years ...	By Donation and Subscriptions.
J. R. Theobalds ...	19th July 1872 ...	Do. ...	Do. ...	To D. or M., &c. ...	

MEDICAL FUND OFFICE,
FORT ST. GEORGE,
30th August 1872.

BOOKS, &c., RECEIVED.

Doctor ; *July.*

Medical Press and Circular ; *July* 3*rd*, 10*th*, 17*th*, 24*th.*

Bangalore Spectator ; *August* 9*th.*

Journal des Connaissances Medicales ; *July* 15*th* ; 30*th.*

Medical Record ; *May* 15*th* ; *June* 1*st* ; 15*th.*

The Secretaries ROYAL MEDICAL BENEVOLENT FUND SOCIETY OF IRELAND, *acknowledge with many thanks receipt of the following Subscription.*

E. Fawcett Esq., ... 1872-73. Rs. 20

THE MADRAS

MONTHLY JOURNAL

OF

MEDICAL SCIENCE.

No. XXXIV.—OCTOBER, 1872.

ORIGINAL ESSAYS.

ART. XV.—*Experiments with Snake (Cobra) Poison.* By JOHN SHORTT, M. D., &c. &c., Surgeon, Superintendent General of Vaccination, Madras Presidency.

(Continued from page 22.)

No. 156.

18*th January* 1870.—A large cobra bit a dog in the left fore foot and a native who came forward to cure snake-bite applied some antidote to the wounded animal repeatedly, notwithstanding which the dog was dead in 30 minutes.

No. 157.

The same day and at the same place a dog was wounded by a large cobra in the left hind leg and the same native gave it some drugs; he scarified the wound and applied the remedy to the part as well as to the scalp, which also he scarified prior to the application of the drug; notwithstanding which the dog was dead in 35 minutes.

No. 158.

On the 17th October a chicken was injected with a few minims of a solution of dried cobra poison, to test its effect; which it killed in 5 minutes. As soon as life was extinct, the chest was opened, the large blood-vessels at the root of the heart were divided and the blood caught in a wine glass.

No.. 159.

One drachm of this poisoned blood was injected into another chicken which it did not harm, as the chicken continued quite well.

No. 160.

On the 18th March 1871, I prepared the following solution—Dried cobra-poison gr. ss. Distilled water m. 60—solve. Of the above solution I injected 20 m. into a full grown male dog, at 3 P. M. the same day, and I had the animal well fed and taken care of—Scarcely any effect was evidenced. On the 13th May 10 minims were again injected at 4-30 P. M. On the 18th May 17 minims of the same solution were again injected at 1 P. M. The same day 3 minims of the same solution were injected into a quail to test its integrity, which it killed in 20 minutes, but the dog continued well.

On the 4th July half a grain of the dried cobra poison dissolved in a drachm of water was injected into the same dog, at 11-22 A.M.; towards evening the animal grew restless and at night it began to grow drowsy—head drooping, tongue at times lolling out, the fore limbs paralyzed. It continued much in this state and died the next morning, the 5th July, at 6 A. M.

No. 162.

At the same time and place to test the solution that was prepared and used for the dog, the tube that contained it was washed out and the washings injected into a chicken under the wing, at 11-24 A.M. and the chicken was dead in two hours.

The object of Experiment 160 was to see if the system would become accustomed to the action of the poison, but in this case the intervals were irregular and too prolonged. This arose partly to my frequent absence from Madras, and in the last dose I miscalculated the strength of the dried poison. I hope to repeat this experiment more carefully on a future occasion.

No. 163.

On the 18th May I injected 3 minims of a solution of cobra poison originally prepared for the dog in experiment 160 into an avadavat, which it killed in 10 seconds—which proves that the dried poison even in solution did not suffer by being kept.

No. 164.

6th July 1871.—To a *Daboia Elegans*, Russel's viper, two drops of carbolic acid were administered at 8-45 A. M.

There was some quivering motion for a time and in 20 minutes it was dead—weight of snake 8 ounces, length 37 inches.

No. 165.

To a common water snake *Tropidonotus schistosus,* 2 drops of carbolic acid were administered. There was some quivering about the body for a while, and it was dead in 10 minutes. Weight of snake 15 ounces, length 39 inches.

No. 166.

At the same date and place, to another *Daboia Elegans,* a solution of strychnine (1 grain to 10 minims) was poured down its jaws. In 2 minutes the snake took on a regular serpentine form, became stiff, and the muscles were hard as a piece of board; and in 5 minutes more it was dead. Weight of snake 36 ounces, length 42½ inches. Was full of eggs with matured young in them.

No. 167.

To another *Tropidonotus schistosus* 3 minims of the same solution of strychnine was given at 9-10 A.M., and in 2 minutes it took on the serpentine form and was dead in 2 minutes more, when it was quite stiff and hard. Weight 2 ounces, length 21 inches.

No. 168.

One drachm of common bazar tobacco was infused in 2 ounces of boiling water and, when cool, about half an ounce of the infusion was poured down the throat of a cobra. In 2 minutes a shrinking of the body of the snake took place, it gradually grew quite stiff and in the course of 5 minutes more to all appearance it was dead. It was laid by, but when examined the next day it appeared quite well and as active as ever. Weight 20 ounces, length 50 inches.

No. 169.

About an ounce of the tobacco infusion was poured down the throat of another cobra, as well as some of the leaves from the infusion, and in 2½ minutes a shrinking, followed by stiffness as in the previous case, took place. On examination the next day life was quite extinct. It is necessary to remember that tobacco stupifies and produces all the appearance of death from which snakes frequently recover in the course of some hours. This has occurred repeatedly in my experience.

No. 170.

12*th October* 1871.—A sheep was bitten by a cobra and two minutes after some antidote was given to it by a native who was brought by G. Johnstone, Esq., Barrister-at-Law. The sheep urinated in about 3 minutes after. The scalp was scarified and medicine applied to it. Animal lame, pupils dilated, restless, gets up and lies down again, defæcated; medicine repeated several times. At 5-30 P. M. animal was stretched on its left side wagging its tail with outstretched head and neck. At 5-35 P. M. it was dead.

No. 171.

13*th October*.—The same native returned with another sheep the next day. He was not satisfied with the last experiment. The sheep was wounded at 11-55 A. M. in the skinfold of the abdomen by a large cobra, and notwithstanding the persistent applications of various remedies it died at 12-40 A.M.

No. 172.

17*th October* 1871.—A Mr. Howell produced a Mahomedan who was willing to test a reputed antidote in his possession with which he stated that he had cured several cases. He brought another sheep which was wounded at 12-20 A.M. by a full sized cobra, and a white powder, which to me had all the appearence and taste of alum, was administered. Notwithstanding repeated doses, the sheep died in 50 minutes.

No. 173.

September 1871—A native doctor as he styled himself by name Teroovengada Charry came all the way from Salem to test a reputed antidote. He brought a sheep which was wounded by a cobra at 3-25 P.M. to which he administered some mixture he brought with him, which was given repeatedly; the sheep was scarified and had some stuff rubbed into it; the tips of the ears were cut off. Notwithstanding the animal was dead at 3-55 P.M.

ART. XVI.—*A Case of Wound of the Chest implicating the Lung, treated by* Assistant Apothecary G. W. EATE.

P. Nokiah, a ryot, aged about 32 years, a spare-made man, was admitted into the Police Hospital on the morning of the 22nd February 1872. He was sent by the police from a village 10 miles distant, and was said to have been stabbed between 11 and 12 o'clock at night.

On examination (7 hours after) I found the man considerably weakened from loss of blood and tightly bound round the chest with his cloth, which was saturated with blood. On removing the cloth, a penetrating wound of the chest was seen, about an inch in length, between the fifth and sixth ribs in a line with the axilla of right side. The air passed freely through during respiration with a blowing sound accompanied with a free discharge of bright arterial blood. There was considerable difficulty of breathing which was chiefly abdominal; a tickling cough and expectoration of frothy bloody mucus. Pulse small and weak. On auscultating the chest, at and around the seat of injury, a loud rough crepitation was distinctly audible.

There were other minor but superficial wounds of the chest.

Treatment.—The wound having been cleaned it was dressed with carbolic acid and oil 1 to 8 parts on lint and a chest bandage applied and the patient placed on the wounded side.

℞ Tinc. Opii. ♏ xx.
„ Digitalis ♏ xx.
Aquæ..... ℥ iv.
℥ i every 3rd hour.

Vespere.—Is much the same; complains of pain in the side; slight hæmorrhage still taking place; pulse small and weak; bowels have not acted. To have Ext. opii gr. ii in two pills, one to be taken at bed-time, and repeated during the night if necessary.

23*rd February.*—Took both the pills; slept pretty well during the night; complains of pain over wound; hæmorrhage entirely ceased. Respiration hurried and slightly oppressed; no cough; skin harsh and dry. Pulse small, soft; auscultation, moist crepitation faintly heard over anterior and posterior portion of right lung, percussion note dull.

Cont. carbolic acid and oil dressing.

℞ Magnesiæ Sulphatis ℥ vi.
Antimonii Tartrati gr. ¾.
Aquæ menthæ pip. ℥ vi.
℥ i every 2nd hour.

I was called to see him at 3 P.M. when he complained of pain along right lumbar region. Bowels have not acted, Fomentation to back. Omit mixt.

℞ Calomel. gr. viii.
Ext opii. grs. ii.
Mix and make 4 pills.
One pill every 2nd hour.

Vespere.—Pain relieved; respiration hurried; skin warm, dry; pulse small, weak.

Cont. pills.

24*th February.*—Passed a fair night, and states he feels better; respiration slightly hurried; skin warm; pulse 108, small, weak. Bowels have not acted; no discharge from wound, which appears to be closed; complains of slight pain over seat of wound. Auscultation; absence of respiration, murmur over anterior and posterior part of right lung, percussion note dull.

℞ Ol. Ricini ℥ i.
Aquæ menthæ pip. ℥ i.
Stat. sum.

Cont. carbolic acid and oil dressing.

Vespere.—Bowels have acted 3 times, feels easy; skin warm; pulse 102, small, soft.

Ext. Opii. gs. ii.
Horâ somni sum.

25*th February.*—Bowels moved once this morning; slept well during the night; slight pain over wound only, which is healing, feels easy. Respiration normal; pulse 90, moderately full, soft. Auscultation; respiratory murmur faintly audible with occasional moist crepitation to within a few inches of wound; percussion note clearer.

Cont. carbolic acid and oil dressing.

Vespere.—Respiration easy; skin cool; pulse 84, moderately full, soft; bowels moved 3 times.

Ext. Opii. gr. ii.
Horâ somni sum.

26*th February.*—Slept well; respiration easy; skin cool; pulse 84, of fair volume and strength; no pain complained of over wound, which is healing. Auscultation the same as yesterday.

Cont. carbolic acid and oil dressing.

Vespere.—Respiration easy, skin cool. Pulse 84, of fair volume and strength.

Ext. Opii. gr. i. h. s. s.

27*th February.*—Much the same as on last report.

Cont. carbolic acid and oil dressing.

28*th February.*—Slept well, complains of pain over seat of wound, and on taking a full inspiration, a little discharge of sanious pus issues from wound. Skin cool, pulse 88, of fair volume and strength.

Auscultation; respiratory murmur fairly audible over back and front of chest, to within about a couple of inches from seat of wound.

Cont. carbolic acid and oil dressing.
To have Ext. Opii. gr. i. h. s. s.

29*th February.*—Slept well, slight pain over seat of wound, respiration easy. A little discharge of sanious pus observed on removing the dressing; pulse 86, moderately full, soft. Auscultation the same as yesterday.

Cont. carbolic acid and oil dressing.

1*st March.*—Slept well, respiration easy, feels better, but still weak; very little discharge observed; pulse 82, moderately full, soft. Auscultation; respiratory murmur becoming clearer.

Cont. carbolic acid and oil dressing.

2*nd March.*—Slept well. Pulse 82, of fair volume and strength; complains of pain over posterior surface of chest, where moist crepitation can distinctly be heard; wound healing.

Fomentation to chest.
Cont. carbolic acid and oil dressing.

3*rd March.*—Slept well; respiration easy; pulse 82, moderately full, soft. No crepitation over posterior surface of chest. Respiratory murmur audible. Wound healing, a few exuberant granulations touched with argenti nitras.

Adhesive straps to wound.

4*th March.*—Improving.

Cont.

5*th March.*—Doing well, passed a fair night; wound nearly healed, pulse 70, of fair volume and strength. Dulness around wound clearing up, respiratory murmur faintly audible. Wound healing, a few exuberant granulations touched with argenti nitras.

Cont. strapping.

6*th March.*—Slept well, pulse 72, moderately full, soft. Wound nearly healed.

Cont. strapping.

7*th March.*—Wound healed; feels quite well, but weak. Pulse 72, moderately full, soft. Respiratory murmur distinctly audible over back, front and side of chest.

From this date he gradually began to improve, and as he still complained of being weak I kept him in Hospital, when

the tincture of the muriate of iron was given in small doses. He was discharged from Hospital on the 6th April 1872.

Remarks.

His deposition was taken by the Sub-Magistrate, on the day of admission, and when asked whether he thought he would die, he said no. He shewed a good deal of "pluck" throughout. I saw the knife produced at Court where my deposition was taken, and judging from the size of the wound I was of opinion it must have entered the cavity of the chest at least an inch and a quarter. The carbolic acid appears to have acted very well in this case in preventing suppuration by excluding the air. A great care was observed while the dressings were being renewed to have as little exposure as possible. The slight effusion that did take place appears to have become gradually absorbed, without even the aid of mercury or the iodide of potassium.

ART. XVII.—*Report of the Medical Committee appointed to investigate the causes of the Epidemic Fever which has prevailed in the Provinces of Coimbatore, Dindigul, Madura and Tinnevelly, during the years* 1809, 1810, *and* 1811.

(Concluded from page 198.*)*

SECTION SIXTH.

The mode of treating the disease, which has been found the most successful; with cautions regarding the best means of preventing relapses.

WHEN the epidemic fever first shews itself, which it frequently does, by a regular attack of an intermittent, we lose no time, on the body becoming cool, in clearing out the bowels by administering a brisk purge, which may either be twenty-six* grains of fresh powdered jalap and

* It must here be observed that the doses of medicine mentioned in this report are for a full grown European; for the natives who are weaker in constitution, we usually order about three-fourths of the quantity.

a scruple of crystals of tartar well rubbed together; a full dose of the sulphate of Magnesia and Manna, or an ounce of the Oleum Ricini. Soon after the medicine* has ceased to operate, we prescribe the Cinchona, and there is to be observed this general rule respecting it, that the nearer the time of giving the last dose is brought to the expected period of the attack of the cold fit, the more likely will it be to accomplish the purpose intended. From six to eight drams of the fresh powdered bark, taken in substance, will commonly be sufficient to keep off a fit; but we have known many cases in which a dram or two more was required; and we think that when the whole can be given, within the last five or six hours, before the return of the shaking fit is looked for, it is more likely to prevent its recurrence than when it is taken in smaller doses and at longer intervals. Some stomachs, particularly in native habits, cannot bear the bark in plain powder; in such cases we have found it beneficial either to add a small portion of ginger to each dose, or to change the substance for the infusion or decoction, adding to it a certain quantity of the tincture and a little aromatic confection. The whole of the following taken in divided doses before the time that the fit is expected will often prove successful.

℞ Infus. Cinchonæ ℥ x.
Tincturæ ejusdem ʒ vi.—℥ i.
Confect. aromat. ℈ i. Misce.

The bark in substance, although in some habits it has an opening quality, in others proves quite the reverse. To obviate the last, which must even in fever cases be attended with bad consequences, we generally add a few grains of Rhubarb to each dose, or what answers just as well, and without irritating the stomach, we recommend the use of laxative injections. Any purging effect from the Cinchona may be easily prevented by adding four or five drops of laudanum to each dose. At the commencement of the hot fit benefit is often derived from thirty or forty drops of the medicine just mentioned, given in a small glass of water, in conjunction

* Pills composed of Calomel and Rhubarb or of Calomel and compound Extract of Colocynth, may also be used for this purpose. Though when there appears to be considerable nervous irritability we are unwilling to give mercury. The strength of the purging pills may be (for a full grown person) five or six grains of Calomel and sixteen of Rhubarb, made into six pills or six grains of Calomel and twelve of the compound Extract of Colocynth made into as many.

with half a dram or more of the Alcohol Ammoniatum Aromaticum or with half an ounce of the Aqua Acetatis Ammoniæ. This appears not only to have the effect of shortening the fit but of sustaining the strength of the patient and enabling his stomach to bear the bark. When the perspiration begins to flow, the drink* ought to be taken tepid, but during the time that the skin is dry and the temperature of the body at its greatest height, cold water may not only be taken with safety, but we think with advantage.

The bark is not to be left off on the fever disappearing, but ought to be continued for eight or ten days longer to break as much as possible the habit of recurrence; forthis purpose three, four, or more doses on the days the fit used to return, will be quite sufficient.

Much has been said with regard to the propriety of giving repeated purges in intermittent fevers, and there are some practitioners in this country who are in the habit of ordering them very freely. However necessary we deem it to be that the bowels should in every instance be kept perfectly open, and that over secretions of bile should be carefully worked off, we are altogether inclined to distrust the frequent use of strong remedies of this class, not only as we have known them, from our own experience, productive of certain mischief by occasioning irritation and debility, but as we are mindful of the lesson that was taught us early in life, by the writings of the judicious Hoffman;† who particularly recommends, that in agues the bowels should be kept open by the *gentlest* laxatives given with the bark or by clysters.

Slight enlargements and indurations of the spleen will sometimes be left after attacks even of the most regular intermittents and in habits otherwise sound; such are of little consequence and commonly disappear rapidly on the disease taking its final departure, without further precautions than attention to proper diet and the state of the bowels.

We have hitherto been supposing that medical aid has been sought (as it ever ought to be) at the very commencement of the disease, when a prompt recourse to the bark

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* Barley water, rice gruel, or what is very pleasant, an infusion of lemon grass (Andropogon,) are the most proper. For old people or those of cold and delicate constitutions, a good sustaining drink during the sweating stage may be made with one and a half pounds of an infusion of sage and one dram of the Aqua Carbonatis Ammoniæ.

† See Med. Rat. Syst. Part I. Cap. I.

after free evacuations have been procured, will often put an entire stop to the disorder; but unfortunately this is not always the case. The disease has perhaps been allowed to run its course* for days together, without any thing having been done to check it. On the contrary, improper food may have been taken, bile pent up, spirituous liquors drank, in fact every thing done which ought not to have been done; the consequence of which must be that abdominal congestion and obstruction of the greater viscera soon takes place and an obstinate and dangerous state of the disorder is thereby most certainly induced.

In such distressing circumstances there is often little immediate advantage to be expected from medicine, without at the same time having recourse to a change of climate (as has been strongly recommended in similar cases by Dr. John Hunter† in his valuable "Observations on the Diseases of the Army in India.") Then calomel‡ will in many cases be found of a greater service (particularly if the habit is still pretty strong and the bowels firm) on the mouth becoming affected with the medicine; some of the most unpleasant symptoms will, in all probability, disappear, when the bark, should it still be necessary, can be administered with more safety.

There is a description of medical men in this country who suppose that in hot climates bark given for intermittent fever has the effect of bringing on abdominal obstruction, if calomel is not at the same time daily administered; but to this opinion we cannot from our own experience subscribe. If full and proper evacuations are procured at the commencement of the disease, if over secretions of bile are purged off, and if great care is at all times taken to keep the bowels open, we see no good reason why this acrid mineral should be given, however necessary it may be to alter the habit. In more serious attacks it is an irritating and debilitating medicine, it is extremely apt to sicken the stomach and produce dyspepsia, and must therefore prove particularly objectionable at all times in delicate

* This we have no doubt has been the chief cause of the great mortality occasioned by the epidemic fever, as thousands in remote situations where no medical aid was at hand must have had their constitution ruined before they could receive the smallest relief.

† See his work, pages 214, 215.

‡ About 4 or 5 grains, made into two pills, one of which is to be given at night and the other in the morning. Should these purge, half a grain of opium may be added to the whole, or more if necessary.

habits, and often in others too when we should as much as possible preserve the tone of the stomach, and prevent it from rejecting the bark. No: obstructions of this nature, we are rather inclined to think, arise from other causes, such as a neglect of timely and free evacuation by stool and, perhaps more certainly still, from repeated, long and severe cold stages having been allowed to take place before the malady was checked; and hence the almost constant affection of the spleen or liver which we see consequent of obstinate quartan agues and which was particularly instanced in the Native Hospital of Dindigul. In support of what we have here advanced we shall bring the authority of one of the most enlightened Physicians of the present age Dr. Jackson,* who in speaking of the Bark says "I was early aware of these objections and watched narrow-"ly that I might discover its real effects and I am now "warranted in saying that it has every right to be consider-"ed as a specific in ague and fever, while it is totally free "from the imputation of occasioning dysentery, dropsy "or visceral obstructions; these complaints were always "the most frequent when this remedy had been the most "sparingly employed."

We not unfrequently meet with very obstinate cases of intermittent fever, though apparently unaccompanied by any peculiar derangement of the abdominal viscera: in such cases, so inveterate is the habit of recurrence, that no quantity of Bark that can be taken seems to have any good effect; against these, many remedies have been used with various success.

We have occasionally tried with advantage the Vitriolic Ether (as recommended by Mr. Davidson in the 5th Volume of the "Medical Facts and Observations") to the quantity of a dram and a half on the approach of the cold fit; and we have also known benefit derived from a full dose of Laudanum given an hour before the expected attack, practice first taught us by Dr. Blare.†

In favor of the use of white Vitriol in agues we cannot say much. We learn from Mr. Hastic‡ that he gave it a fair trial in the Hospital at Dindigul in May last but thought,

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* See Dr. Jackson's Treatise on the Fever of Jamaica, pages 317—318. See also what he says against the notion of bark producing obstruction at page 336

† See his Observations on the Diseases of Seamen p. 444 3rd Ed.

‡ See his letter No. 7 which accompanies this Report.

though in a few instances it * appeared to do good, that it was apt in others to produce much general uneasiness, headache, nausea and a most disagreeable sensation at the upper part of the œsophagus.

An emetic given a little before the cold fit was expected has occasionally kept it off.

Arsenic which for some years past has come much into vogue in England, has been used amongst the Hindoo Medical Practitioners, from time immemorial; and they have great confidence in its virtues in intermittent fever. We have been in the habit of occasionally prescribing it in solution as recommended by Dr. Darwin to the extent of eight drops three times in the day, but we do not much approve of the practice.

In recommending the use of the cold effusion during the hot fit, we have been more fortunate; and are of opinion that it is a powerful remedy by giving a check to the disease, and we have, in several instances, known daily immersion in the sea, prove the happy means of putting an entire stop to agues which had baffled every other exertion that had been made to conquer them.

A blister to the nape of the neck will often prevent the recurrence of the cold fit, and, in cases of great debility when the stomach rejected almost every thing, we have known the patient saved by having a warm plaster applied to his stomach and taking large doses of the tincture of Bark, each dose containing six or eight grains of ginger: or the Bark, in such cases, may be given in an infusion of ginger; or, what we have occasionally known prove very beneficial, powdered ginger may be taken in an infusion of the Creat root† or Gentian without any bark at all.

Notwithstanding all these remedies however, the disease will sometimes prove very obstinate‡ and if not checked run on to coma and death.

In such cases Calomel§ (or the blue pill), even when no obstruction has appeared, is often found to produce the best

* It was given in the quantity of about three grains every three hours, or one grain every hour, commonly about twelve hours before the attack was expected.

† The Justicia Paniculata.

‡ Mr. Tait, Garrison Surgeon of Trichinopoly, whose professional talents are well known, has informed us that in obstinate cases of intermittent fever, when he had tried everything else he could think of without success, he had succeeded in checking the disease by giving at bed time a full dose of the Elixir Sacrum; or as it is now called the Tinctura Rhei et Aloes.

§ Continued till the mouth is a little affected: should it purge, a small quantity of opium may be added.

effects; and not so much by putting a certain stop to the recurrence of the attack, for in accomplishing this end it frequently fails,* but by inducing a new action and thereby bringing about so great a change in the habit that the Cinchona which previously had been given in vain will now be administered with a happy effect.

In the latter periods of intermittent fever, particularly if free evacuations have not been procured in the earlier period of the disorder, distressing and alarming bowel affections often take place, not attended with much straining but of an obstinate and debilitating nature. Gentle opiates, given in weak cretaceous mixtures made cordial by some aromatic, are sometimes of service; but it is but too often a fatal symptom particularly amongst the natives.

Œdematous swellings and ascites also not unfrequently supervene from pure debility; these, when no particular abdominal indurations appear, are best treated by repeated small doses† of tincture of squills given with a little ginger and tincture of bark, having recourse at the same time to frequent frictions with dry flannel and proper attention to the ingesta. But should the bowels be altogether firm, and there is any reason to think that the dropsy arises rather from visceral congestion than weakness, calomel may be given in conjunction with the powder of squills in small repeated doses or, what may be safer as less likely to bring on flux, the common mercurial pill with the addition of the dry squill powder. The following we have prescribed with advantage.

℞. Pilulæ Hydrargyri grs vi.
Pulveris Scillæ siccat. grs iss.

Misce ut faint pilulæ duæ. Sumatur una bis in die.

These may be continued for a longer or shorter period according to circumstances, adding, should it be necessary, a little opium and at the same time paying the strictest attention to proper diet and the use of dry friction.

When any person is seized with remittent or intermittent fever, who has previously suffered much from liver affections or dysentery, and who may still have diseased abdominal

* We know many instances of the fever continuing to recur while the mouth was affected by mercury

† ℞. Tincturæ scillæ..... gtt x.
Do. cinchonæ ..... ʒ ii.
Pulveris Zingib..... grs viii.
Aquæ fontan..... ʒ iss.
Misce ut fiat mistura ter in dies sumenda.

viscera, a most complex and dangerous morbid condition may be expected, requiring the nicest treatment; as each succeeding attack but too surely aggravates the old derangement, and the uncertain state of the bowels is as certainly discouraging to any positive hopes we might entertain from the use of the bark. In such a predicament, indeed, this medicine is to be used with the greatest caution; and the infusion, with the addition of a little of the tincture, is to be preferred to the substance; but when there is much uneasiness or pain in the right side even these should be desisted from, a blister should without loss of time be applied to the part affected and mercury had recourse to; at such time however as the bowels are often much out of order, the following persevered in for a short time we think preferable to plain Calomel as an alterative.

℞. Pilul. Hydrag. gr. vi.
Calomel. grs. g i.
Pulv. Ipecac. gr. iii.

Misce ut fiant pilulæ tres; sumatur una ter in die.

To these a small quantity of opium may be added, should it be necessary; resuming the use of the Cinchona, if required, after the hepatic symptoms are removed; in other cases, if the attacks of fever continue to recur, we have even given it at the same time with the pills, especially if the liver complaint or flux was rather chronic than acute.

Sometimes in complaints of this nature that have remained obstinate we have known an issue in the side of great service, together with a judicious course of bitters and gentle tonics; we say judicious, because we are aware that mischief is often done by an indiscriminate use of the remedies.

A change* of air we have constantly found of so great advantage in promoting the recovery of all such as have been attacked with Remittent or Intermittent fever that we never fail to recommend it to those who have it in their power to try it.

It is almost needless to add here how much diet ought to be attended to in the cure of fever. All crude vegetables and austere fruits are to be cautiously avoided, as should food of a heavy nature or that is difficult of digestion. Light puddings, clear broths, with bread or rice are proper; on the well days

* Celsus had so high an opinion of the benefit to be derived from a change of air in many cases of sickness that he says, rather than not change it, it is better to go from an air acknowledged good to a bad climate. Vide Cels Lib II. Cap I.

a little tender animal food, with two or three glasses of wine, or brandy and water made weak, may be safely taken; gentle exercise is useful and some people, particularly such as are subject to hepatic affections, often derive much benefit from wearing flannel next the skin; which prevents any bad consequences from sudden chills and keeps up a nearly uniform temperature on the surface of the body. Above all things the state of the bowels is particularly to be attended to and excess of every kind carefully shunned.

When an Intermittent is preceded, which it often is, by a slight febrile attack, more or less continued, and usually of one or two days duration, we prescribe an emetic* if the state of the stomach admits of it. After its operation has ceased we evacuate the bowels by means of a smart purge, and for this purpose nothing answers better than a full dose of the compound powder of Jalap, salts and Manna, or Jalap and Calomel, giving on the evening of the same day a draught prepared with half an ounce of the Aqua Acetatis Ammoniæ, two drams of common Syrup and thirty drops of Laudanum, or one composed of one dram of Antimonial wine and as much of the Spiritus Etheris Nitrosi.

Should the patient still continue so feverish on the next morning as to prevent his using the bark in the way already recommended, he may take the following in doses of an ounce and a half every two hours.

℞. Mistur. Salin ..... ℥ iss.
Tartar. antimon ..... gr iss.

Or it may be made without the Emetic Tartar, adding instead of it half a dram of purified nitre.

When from the appearance of symptoms formerly described (in section 5th) it is evident that a fever of the remittent kind may be expected, the stomach is often in so irritable a state that it would be highly improper to give an Emetic. In such cases we order at once the following pills.

℞. Calomel..... grs vi.
Pulv. Jacob..... gr iij
Misce et divide in pilulas tres.

The whole of which may be taken in the course of twelve

* This may either be of Tartar Emetic or Ipecacuanha, a scruple or fifteen grains of the latter will be sufficient, the first is best given in small divided doses.

R. Mistur. Salin. ℥ i.
Tartar. Antim. grs. iii. misce.

Asssumatar ℥ iss omni quadrante hora donec non excitatur vomitus vel alvus solvatur,

hours. These will produce copious evacuations and may also perhaps bring on a slight degree of diaphoresis, which ought to be encouraged by taking frequently a little tepid drink. On the second* day, when the paroxysm will in all probability be found every way more severe than on the first, no time is to be lost in having recourse to mercury, the remedy which at such times can best be relied on for producing a regular intermission; seven or eight grains of Calomel with three or four of Camphor† are to be well rubbed together and made into four pills, one of which is to be taken every three hours during the day, these will often soon have the desired effect by inducing a desirable change in the habit and so favorable a remission or intermission of fever that the bark can be given with safety.

Notwithstanding this mode of treatment however we have found that in some instances the epidemic fever in its remittent form has proved a very severe and dangerous disease. Where no positive advantage appears to be derived from the use of the pills just mentioned, we think it advisable no longer to delay the use of the Cinchona, even before a regular intermission has been obtained, as it is the surest means of sustaining the strength of the sufferer. The decoction or infusion, with a small portion of the fine powder in it and a little of the tincture, will then be the best form: giving from time to time what light nourishment‡ can be taken.

In the more extreme stages of this malady blisters are often of great service by rousing to recollection and exciting the *vis vitæ,* the bowels are to be kept open by mild injections to save the stomach and grateful cordials are to be united with the bark.

Relapses of the Epidemic fever in all its forms and types have been extremely common and troublesome; these seem to be in a great measure occasioned by the habit of recurrence that has been acquired during the course of the disease; they are apt to happen too, on any particular change

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* At this period of the disease we have in some instances been able to check its further progress, by means of the cold affusion, while in others it altogether failed in producing the desired effect.

† There appears to be something in the nature of Camphor which peculiarly fits it for being given in conjunction with Calomel; it soothes in some measure the acrimony of this mineral, tends to calm the nervous system and gives the fluids a tendency to the skin.

‡ With regard to wine we must recommend that it be given with great caution in every instance, and if it appears to increase the febrile heat and excite delirium (which it often does) it is altogether to be abstained from.

of the weather or to be brought on by irregular living, repletion, fatigue, cold bathing in damp weather or improper exposure to the heat of the sun or dews of the night. Costiveness, pent-up bile and indigestion we have also known frequently to induce a return of the disorder, when it appeared to have taken its final departure.

With regard to the moon producing relapses of fever, we cannot speak with much confidence. This influence was first taken notice of in India by Dr. Lind* many years ago, and since his time more particularly by Dr. Balfour, who has written on the subject. The latter is of opinion "that "the three days which precede and the three which follow "the new or full moon are remarkable for the invasion and "relapses of fever; that the days of the full moon and the "day of the change of the moon are the most remarkable of "all and further that the days which follow are in general "more remarkable than those which precede."†

It is singular that by Dr. Jackson's *own* observations in America it appeared that the four days preceding,‡ not following, the full moon were more particularly distinguished for febrile attacks: these differences impress us with doubts on this point, doubts still more strongly felt, from a knowledge of further opposite opinions which we shall here mention. The excellent Dr. James Clark§, long a most accurate observer in the West Indies, says that he ascribed those periodical returns of intermittents rather to a certain habit contracted in the constitution than to any influence of the moon on the body; on the other hand, as far as regards the more immediate object of this report, Mr. Hastic in a letter¶ addressed to the Superintending Surgeon of the southern division has these words. "About two days before the change of the moon took place, as last month at Dindigul, relapses were frequent amongst convalescents."

But then again, in a communication which the President of this Committee, received some years ago from Mr. Currie now surgeon to the Residency at Hydrabad, we learn, that by a correct account of attacks and relapses of fever in the Hospital of the 1st Regiment of Native Cavalry during a period of nearly two years in the Ceded Districts, Mr. Cur-

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* See his "Diseases of Hot Climates."

† See Dr. Jackson's Treatise on the Fevers of Jamaica, page 95.

‡ See the same, page 98.

§ See his treatise on the Yellow Fever of Dominica, page 96.

¶ See No. 7 a letter which accompanies this Report.

rie clearly ascertained that so far from a greater number of relapses or attacks happening at or near the full of the moon they were least common at these times.

To prevent relapses of fever we know nothing so likely to be of advantage as a change of air, particularly by a sea voyage. To effect the same happy purpose great attention to the state of the body is absolutely necessary: taking occasionally a little tincture of Bark, together with a small quantity of that of the Creat root will be of service: and nothing can more certainly be so than the carefully avoiding every kind of excess.

At an early period after our appointment we had occasion to regret that much mischief evidently arose from a deficiency of medical aid in many of the smaller villages and remote corners of the southern provinces, and then had the honor of calling to the attention* of the Medical Board certain short rules which we thought could easily be followed by the natives themselves, without the immediate presence of regular Vytians.

We were much flattered to find that what we then recommended was so much approved of by the Medical Board, and subsequently by the Honorable the Governor in Council, that the latter lost no time in ordering the most prompt obedience to our various prescriptions and cautions throughout the whole of the districts in which the fever at that time raged and we have now the most heartfelt satisfaction in saying that our advice was not bestowed in vain. The natives in different quarters have acknowledged the great benefit that has been derived from the medicines we brought to their notice and confess that they believe them to have saved many lives.

We shall conclude this section, by subjoining a list of a few of the many articles which are used in intermittent fevers by the Malabar medical practitioners; but first let us testify our great joy at now having it in our power to say that by every account we can obtain we learn that the epidemic fever has ceased from its work of destruction; and that the few unfortunates who still suffer are merely those who having escaped with life from the first violence of the disease, are now lingering under the visceral derangements which it was but too apt to leave behind.

1*st.*—*Vullay Pashanum* (white arsenic) of this they are

* By letters dated 29th of April and 12th of May 1811.

in the habit of giving about the fifteenth part of a grain twice daily.

2nd.—The bark of the *Soimedoo**. This is particularly used by the inhabitants of the northern Circars, we have found that when taken to the extent of five or six drams in the course of the day it produced vertigo and other nervous symptoms, without being by any means so valuable in other respects as the Cinchona.

3rd. The bark of the *Vaypoomarum*.† This is much used by the Tamool Physicians, it is very bitter and is a powerful tonic.

4th. The nut called in Bengal *Caat Caranja*, and by the Malabars *Cullachie kaie*, it is the produce of the *Cæsalpinea bonducella*.

5th. *Chookoo* (Ginger.)

6th. *Womo* (Siron ammi.)

7th. *Sittarettie* (Costus spicatus, Rotler).

8th. *Tsyragum* (Cuminum cyminum).

9th. The bark of the *Caroowelimputtay*, it is called *Babul* in Hindostani, and is obtained from the Acacia Arabica.

10th. And last, the *Corte de Pala* or Tellicherry bark which is much used on the Malabar Coast.

SECTION SEVENTH.

Observations respecting the measures that might be adopted to prevent as much as possible the recurrence of so great a mortality from a succession of irregular seasons.

To correct the state of the atmosphere, when it has become noxious from such causes as we have enumerated, it will be readily allowed, is not within the power of man; but it must at the same time he granted that this evil will be attended with infinitely worse consequences under certain circumstances than under others.

We have observed in a former Section of this report that in all low marshy situations the epidemic was found to rage with great violence; hence the propriety becomes self-evident of our now recommending that, wherever it can

* Swietenia Febrifuga (Roxb.)
† Melia Azadirachta.

be done with convenience in future, villages and hamlets should be built on sites that are high and dry. We have also seen that in places close to mountains, which are ill ventilated or covered with thick jungle, the disease was very prevalent; a circumstance which leads us to express our opinion that the greater the distance towns and dwellings of every description are from these high lands, the better chance will those have who inhabit them of escaping the fever.

It is a well established fact that during such calamitous periods as that which we now contemplate with sorrow, the lower* classes ever suffer most, the natural consequence no doubt of their not enjoying the comforts which the more affluent can command; a fact too corroborated on the present occasion by our having in every instance remarked that those individuals were the most healthy who were best lodged, fed and clothed; in the Coimbatore country where the greater part of the inhabitants sleep on cots and in bleak weather have cumblies to cover them, the epidemic fever was less destructive; as also in the more central tracts of theTinnevelly district and particularly in those beautiful and thriving villages,on the banks of theTambarapournie where an active and superior race of people seem to rceive the just rewards of of their labour and industry. How much then ought it to be the study of every Government to meliorate as much as possible the condition of the inferior ranks. The ample advances of money that have been made to relieve the distress of the cultivators in these Provinces testify how well this is understood by the supreme authority at Madras and we shall here take the liberty of suggesting what we conceive ought further to be done to amend the condition of the native inhabitants.

1st.—To give them every encouragement to build their streets wide and regular.

2*nd*.—To recommend tiling in place of thatching the roofs of houses, to such as can afford it.

3*rd*.—To point out the benefit of sleeping on cottles (truckle-beds) instead of lying on the damp ground.

4*th*.—And lastly, to have strongly urged, to men of all castes, the advantages that are to be derived in moist and bleak weather from being covered with cumblies.

It has been remarked by a very accurate observer, Dr. W.

* See Malthus on Population. Vol 2nd page 59.

Fowle,* that intermittent fevers in the West Indies are ever the most common and dangerous in those islands which are the least cultivated. Dr. S. Farr† in his translation of the Epidemics of Hippocrates seems to have thought so highly of the influence of agriculture that he has introduced it as one of the means by which a distempered state of the air may be remedied or prevented : and Dr. A. Wilson‡ in his valuable observations or the influence of climate, has these words (in speaking of America) " The European inhabitants who were transplanted to that continent, seemed for a time to degenerate ; " but the face of the country being by degrees changed " from woods and morasses to a clear surface and cultivated fields and consequently from an impregnated to " a pure atmosphere, those appearances have subsided " and the natural effects have begun to flow from these " changes, which there was every reason to expect from its " cultivation and climate ; and the more quickly it is deprived of its woody covering the more rapid will its " improvements be in every thing that hath distinguished " the European nations in equal latitudes."

With such authorities then before us, we shall here venture to offer our opinion with some confidence. That nothing is more likely to prove advantageous to the climate of our Indian dominions, than the clearing away of jungle, the draining of useless swamps and an extensive cultivation of waste lands ; and we are extremely happy to learn, that at this very time, those objects occupy the serious attention of the Governor in Council of Fort Saint George.

In a communication which we made to the Medical Board from Bhavanie, in the month of May we expressed a belief that many deaths had been occasioned by the ignorance of the Native Medical Practitioners, regarding the best method of treating the epidemic fever and we then recommended, with a view of obviating the mischief thence arising, that the Vyteans should attend for a time to the personal instructions of such Surgeons or Assistant Surgeons as might be stationed nearest to their respective villages : but we have since thought that a much more eligible method might be adopted to accomplish the same end by a concise and distinct account of the European method of treating fevers (and two or three of the most

* See his Treatise on the different Fevers of the West Indies, page 1.
† See his Preliminary Discourse from pages 38 to 43.
‡ See his work, pages 275, 276.

common diseases of these countries) being translated into Malabar, and the work distributed gratis amongst the Hindoo doctors.

In a former Section we mentioned our great joy at having had it in our power to say that the ravages of the epidemic have ceased: and perhaps we cannot better conclude our report, than by expressing an earnest hope, that what has been advanced by Dr. Short in his "History of air and seasons" as well as by Mr. Malthus* may on this occasion be realized viz. "That a severe and mortal epidemic is generally succeeded by uncommon healthiness."

(Signed) WHITLAW AINSLIE, M.D.,
Superintending Surgeon of the Southern Division and President of the Medical Committee.

(Signed) A. L. SMITH,
2nd Member.
(,,) M. CHRISTY, M.D.,

COURTALUM,
27*th August* 1811. } *3rd Member.*

* See Malthus's Essay on Population Vol. 2nd page 63.

No. 1.

Report of Persons who died in the Northern and Southern Divisions of Coimbatore District.

Taluqs.	Died from January to July 1810, in Fuslie 1219.			Died from 1st August, 1810 to 30th April 1811.			Total.		
	No. of Males.	No. of Females.	Total.	No. of Males.	No. of Females.	Total.	No. of Males.	No. of Females.	Total.
Coimbatore	931	823	1,754	974	830	1,804	1,905	1,653	3,558
Cheoor and Cooroomundoor	408	292	700	632	564	1,196	1,040	856	1,896
Perindorie	419	370	789	418	296	714	837	666	1,503
Erroad	332	265	597	133	126	264	470	391	861
Andoor...	434	354	788	608	559	1,167	1,042	913	1,955
Suttemungalum	655	496	1,151	776	640	1,416	1,431	1,136	2,567
Coligal...	569	412	981	430	301	731	999	713	1,712
Caroor	465	363	828	489	374	863	954	737	1,691
Darapooram	307	197	504	497	460	957	804	657	1,461
Pillanchie	896	697	1,593	699	586	1,285	1,595	1,283	2,878
Chuckragherry	351	224	575	375	310	685	726	534	1,260
Pulladum	302	201	503	353	253	606	655	454	1,109
	6,069	4,694	10,763	6,389	5,299	11,688	12,458	9,993	22,451

BHAVANY,
9th July, 1811.

E. E.

(Signed) W. GARROW.

No. 2.

Statement of the Population in Fuslie 1219 *with the Persons who died in the Coimbatore District.*

Taluqs.	Population in Fuslie 1219 or 1809, 1810.			Died from January 1810 to 30th April 1811.		
	Male.	Female.	Total.	Male.	Female.	Total.
Coimbatore	41,313	42,569	83,882	1,905	1,653	3,558
Cheoor and Cooroomandoor	25,155	25,258	50,413	140	856	1,896
Parindorie	26,986	26,207	53,193	837	666	1,503
Errcad	16,078	16,248	32,326	470	391	861
Andoor	22,285	22,021	44,306	1,042	913	1,955
Sattimungalum	24,537	25,789	50,326	1,431	1,136	2,567
Coligal	23,259	21,167	44,426	999	713	1,712
Caroor	27,536	26,479	54,015	957	737	1,691
Darapooram	29,950	29,097	59,047	804	657	1,461
Pillanchie	20,417	21,021	41,438	1,595	1,283	2,878
Chuckragherry	22,182	22,296	44,478	726	534	1,260
Pulladum	19,241	19,515	38,756	655	454	1,109
	2,98,939	2,97,667	5,96,600	12,458	9,993	22,451

BHAVANY,
30*th July*, 1811.

E.E.

(Signed) W. GARROW.

of 1809, 1810 and 1811.

No. 3.

Comparative Statement of Deaths in the Divisions of the Dindigul District for twelve common healthy months and for the last twelve months, that is from 1st April 1810 to the 31st March 1811.

Names of the Divisions.	Names of the Estates in each Division.	Number of Deaths in healthy year.	Number of Deaths since 1st Apr. 1810 to 31st Mar. 1811.
Toddycumboo...	Toddycumboo ...	78	584
	Vadasundoor ...	105	439
	Colatoor ...	153	659
	Tennumpillay ...	81	614
	Terriodoo ...	65	505
	Adianoat ...	122	1,159
	Goodum ...	249	361
	Marnoot ...	196	714
	Chittynaukenputty.	143	1,252
	Vadamadura ...	159	1,168
	Balakistnapooram...	120	1,075
	Attoor ...	72	607
		1,543	9,137
Iyempilly ...	Iyempilly ...	6	17
	Caliampoodoor ...	7	... ...
	Kaeycadavoo ...	10	15
	Keeranoor ...	12	14
	Vangarray ..	9	10
	Vellumputty ...	36	47
	Coothampoondy ...	11	67
	Perryacottar ...	28	183
	Veeroopatchee ...	38	430
	Palaney ...	11	35
		168	818
Thenkaray ...	Thenkaray ...	111	188
	Allynagram ...	63	254
	Andyputty ...	52	205
	Davadanaputty ...	69	233
	Gungoowarputty ...	10	513
	Malamungalum ...	34	340
		337	1,733
Wootampollam.	Wootampollam ...	77	695
	Chinnamanoor ...	133	152
	Cumbum ...	99	548
		309	1,395
	Buttalagoontah ...	167	1,130
	tal Dindigal Estates.	2,524	14,213

Comparative Statement of Deaths in the Zemindaries of the Dindigul District for twelve common healthy months, and for the last twelve months, that is from the 1st *April* 1810 *to the* 31st *March* 1811.

		Number of deaths in a healthy year.	Number of deaths since 1st April 1810 to 31st March 1811.
Minor Zemindaries ...	Guntamanaickoor.	199	504
	Coambay ...	46	211
	Ramgherry ...	71	1,601
		316	2,316
Sequestered Zemindaries.	Nellacottah ...	296	2,875
	Sundyhoor ...	42	297
	Comarawaddy ...	260	1,809
	Total Zemindaries.	598	4,981

Number of deaths in the Dindigul Pollams from the 1st of July 1810 to 31st March 1811.

NAMES OF THE POLLAMS.	Number of deaths from the 1st July 1810 to the 31st March 1811.
Cunnywoddy	4,738
Madoor	1,220
Tavasymaday	456
Ammaterray	688
Yamakalapooram	1,266
Ammyanaickenoor	1,946
Dodyencottah	165
Vadagarray	240
Bodgnaikenoor	742
Tevaurum	227
Yerrachikanaiknoor	15
Sookamputty	808
Pullyapanaiknoor	90
Total...	12,601

ABSTRACT.

	Number of deaths in a healthy year.	Number of deaths since 1st April 1810 to 31st May 1811.
Dindigul Estates ...	2,524	14,213
Do. Zemindaries ...	914	7,297
	3,438	21,510
Do. Pollams from 1st July 1810 to 31st March 1811 ...		12,601
Grand Total...	.....	34,111

(Signed) ROUS PETER,
Acting Collector.

(A true Copy)
(Signed) WHITLAW AINSLEY,
Superintending Surgeon S. D. and President of the Medical Committee.

No. 4.

Statement showing the estimate of population and number of deaths in the healthy season and the actual number in the unhealthy season of one year 1810-11 *in the District of Madura.*

	In the healthy season for twelve months.			In the unhealthy season for twelve months up to May 1811.			Estimate of Population in the healthy season for fusle 1212 or from 13th July 1802 to 12th July 1803.	REMARKS.
	No. of inhabitants possessing land.	No. of strange inhabitants.	Total.	No. of inhabitants possessing land.	No. of strange inhabitants.	Total.		
Mandakolum	26	588	614	321	4,751	5,072	...	About 7 or 8 Villages are situated near the Hills where deaths were more than in Villages distant from the Hills.
Sholavundan	34	384	418	232	2,955	3,187	...	
Teroomunglom	417	84	501	2,413	548	2,961	...	About 5 or 6 Villages near the Hills do.
Auneyoor	315	...	315	1,893	...	1,893	...	About 2 or 3 Do do do.
Thoorumboor	241	...	241	936	285	1,221	...	About 7 or 8 Do do do.
Mellore	200	...	200	1,721	573	2,294	...	About 3 or 4 Do do do.
Nuttum	261	1,383	1,644	1,381	6,617	7,998	...	About 3 or 4 Do do do.
								About 5 or 6 Do do do.
Total of Madura.....	1,494	2,439	3,933	8,797	15,729	24,626	2,45,654	
Dindigul	...	...	...	...	...	...	2,95,654	
						Total...	5,41,308	

MADURA, *July* }

(A True Copy.)

(Signed) ROUS PETER, *Acting Collector.*
(Signed) WHITLAW AINSLIE, M. D.,
President of the Medical Committe.

of 1809, 1810 *and* 1811.

No. 5.

Statement of deaths of people and cattle occasioned by the unusual state of the season, shewing at the same time the population and the heads of cattle as taken in Fuslie 1211, *in the Province of Tinnevelly, from the month of February to* 30*th June* 1811.

Names of the Districts.	Population as taken in Fuslie 1211.	Number of Deaths since February to 30th June 1811.	Heads of Cattle as taken in Fuslie 1211	Number of Cattle dead since February to 30th June 1811.	Centage of Deaths of People it bears to the Population.	Centage of deaths of Cattle it bears to the whole.	Number of large Tanks.	Situation of the Districts.	Marshy Lands.	Remarks.
Sharenmahadavy.....	36,745	1,564	14,919	2,396	4¼	16	...	West end of the District situated 10 miles from the Hills.	About 70 villages including hamlets.	Most suffered near the Hills, low grounds and marshy lands on the Sea Coast.
Nelliambolum	80,881	3,646	22,366	2,021	4½	9	1	West end of do. do. 4 miles.	About 80 Do. do.	
Vedoogramum.....	19,698	806	7,338	1,738	4	23¾	...	50 miles from the Hills.	About 15 Do. do.	
Brummadashum.....	35,320	2,265	17,422	445	6½	2½	...	Most of the Villages on the borders of the Hills.	Most of the District.	
Tencaushie.....	34,084	4,147	12,257	3,000	12	25	2	Do. do. do.	Do. do. do.	
Streevelliputtoor.....	68,494	4,550	35,222	8,810	6½	25	2	One-fourth of the villages near the Hills	40 or 50 villages including hamlets.	
Shenkernacovil	29,661	1,040	20,515	4,566	3½	22½	2	One-half of the Villages within 10 miles	About 7 or 8 Villages.	
Streevygoontom.....	69,669	2,382	33,558	9,460	3½	28	5	60 miles from the Hills.	About 10 Villages.	
Calacaud.....	92,592	5,372	49,057	8,680	5¾	17½	5	One-fourth on the borders of the Hills and one-eighth on the sea-side.	About 10 Villages.	
Alwar Ternagery	36,089	970	10,247	1,967	2¾	19	4	60 miles from the Hills.	Most of the District.	
Punjamahal.....	68,436	3,966	10,103	1,190	5¾	11½	1	Most situated on the sea-side.	Do. do,	
Total ..	5,71,669	30,708	2,33,034	44,273	5⅜	19	22			
Estimated Deaths in the 27 Pollams which have not been regularly collected.....	1,19,027	7,494	58,290	11,700	6¼	20	3		N. B.—Very few of the above Villages are on the marshy grounds and the rest surrounded by it.	
Grand Total...	6,90,696	38,202	2,91,324	55,973	5½	19¼	25			

Tinnevelly, 30*th June* 1811.

E.E.

(Signed) J. HEPBURN, *Collect.*

No. 6.

Q. 1. When and where did the disease first attract notice?

A. In the districts of Tencoshie and Streevelly Puttoor in the month of February last. These places are near the hills.

Q. 2. Was the disease in Tinnevelly at a later period than at Madura, Dindigul or Coimbatore?

A. The disease first broke out at Madura and Dindigul before it reached this. During the month of March, April and May of last year, more than usual sickness prevailed in the district of Tencoshie and in the adjacent Pollams of Chocumpetty and Shevegherry situated near the hills to the westward. At the expiration of those months however the disorder ceased.

Q. 3. Has there been any general or unusual sickness among cattle or other animals since this disease became alarming?

A. There is not any uncommon but an unusual degree of sickness among cattle, many of which, and an immense number of sheep, have recently perished; but the mortality is not ascribed to the influence of the epidemical disease, the wet weather being supposed to have caused it.

Q. 4. Are the members of a family generally attacked *at once* or only after one of them has been taken ill.?

A. The disorder is thought to be infectious, as one person is said to be first seized with it, although from the protracted nature of the disease many members of one family are sick in a house at one time in different stages of it.

Q. 5. Has the disease been general over the Provinces to the southward or in particular places, and can its commencement be traced to returning pilgrims or other intercourse of the inhabitants?

A. It is general over the Province but more violent along the sea-coast and in the vicinity of the Hills; the centre part of the country is less sickly. The commencement of the disease is ascribed to three causes.

First.—To an unusual heavy fall of rain.

Second.—To the return of pilgrims from Pylney in the Dindigul District. A sickness of this nature is not unknown in this part of the country, when an unusual fall of rain takes place, as may be seen by the following extract from Orme's Hindustan Vol. 2nd, page 201 in March 1757. viz.,

"Whilst these affairs were adjusting, the southern mon-
"soon setting in on the coast of Malabar broke over the
"Western range of mountains with the utmost violence and
"descending, with the cataracts it had formed, into the plain,
"deluged the whole country to the Eastern sea. The storm,
"rain, and inundation continued without intermission for
"two days and two nights. The harvest, just ripe, was
"swept away and with it the habitations of the cultiva-
"tors; the rains continued several days after the winds
"had abated; it required many days labour and sun-shine
"to drain and dry the ground and more time to repair the
"devastation which the agriculture of the country had
"suffered; during which an epidemic sickness broke out
"and carried off many of the distressed inhabitants by
"sudden deaths, which the patients' simplicity and the su-
"perstition of their character imputed to the visitation of
"the goddess Letchmie, coming they knew not whence
"from the north." Every syllable of the above quota-tion agrees with the present circumstances except the storm.

3*rdly*.—The disease is attributed to the exhalation and stench occasioned by the large bodies of stagnant waters on the sea coast.

This fever or ague is said to proceed from bile. The patient on the second day after being seized with the dis-order experiences a kind of fit, and he dies on the third day. If the patient survives the fever for 9 days he is not con-sidered in any danger and in this way the fever lasts either a fortnight, or a month; at first daily and afterwards every two days causing great weakness accompanied with itch and diarrhœa.

Three-fourths of the people who returned from Pylney have died, most of them on their way to Tinnevelly, and the rest continue to this day ill of the diarrhœa or rheumatism in their knees.

Q. 6. Has the disease been more fatal amongst the huts of the poor? or equally prevalent in the more comfortable houses of the people of caste?

A. It is much more fatal among the huts of the poor, than with those who reside in comfortable houses. The mortality has been great among Toddy people who live in Pal-myra topes, and also among the weavers. The houses of both these descriptions of peo-ple being of the worst kind. The former live in huts of

Palmyra leaves, many of which were destroyed by the storm in December, and they left uncovered.

Q. 7. Has there been any change in the grain or food of the country, by reason of diseased growth from the unusual fall of rain or any other cause that can be traced ?

A. No it is entirely owing to the causes explained in answer to the Query No. 5.

(A true copy)

(Signed) W. AINSLEY, M.D.,
President of the Committee.

No. 7

To

THE SUPERINTENDING SURGEON
Southern Division.

SIR,—I have the honor of transmitting my Returns for last month, by which you will perceive that the number of our sick is greatly increased ; most of those who escaped the fever at Dindigul have been taken ill since their return : and I am sorry to add that the sick whom I brought along with me have hitherto derived but little permanent benefit from their removal to a healthier climate. During the march, and for a considerable time after our arrival here, there was an evident amendment in the state of the sick ; and an air of cheerfulness was diffused throughout the Hospital in which I most cordially participated and was led to indulge hopes that unfortunately haye not been realized. For about two days before the change of the moon, as took place last month at Dindigul, relapses were frequent among the convalescents and those affected with the disease at the time suffered an exacerbation of every symptom. Though I had used the precaution of opening the bowels and throwing in a large quantity of Bark before this period, yet some cases proceeded rapidly and irresistibly to a fatal termination.

It is unfortunate that we cannot regulate the diet of Natives nor do their habits permit very rigid confinement. I have been able to trace the origin of some dangerous and even fatal cases of flux to their eating cucumbers and other

vegetables, in which notwithstanding every caution they seem to have a strong propensity to indulge.

I have employed the mineral acids as you directed with good effect; and have found camphor a valuable addition to the calomel; James's powder combined with calomel is resorted to when the object is to reduce the disease to a regular form by procuring a distinct remission.

I have tried the sulphate of zinc in some intermittents; but with no great success. In a few cases, it appeared to be useful; in others, though it checked the regular paroxysm, it was evidently hurtful by causing much general uneasiness, accompained with headache, nausea and slight but constant heat of skin; such patients complained also of a most disagreeable sensation about the upper part of the œsophagus, arising, as it were, from an inverted action of that organ. This medicine might perhaps be employed with advantage in changing the type of an obstinate quartan.

In addition to the above remarks I shall only add that I endeavour occasionally to interrupt the morbid action by the exhibition of an emetic or a full dose of Laudanum before the accession of the cold fit: and have tried, for the same purpose, what I have heard recommended, equal parts of the tinctures of rhnbarb and and senna which seem to have more effect than can be easily accounted for. Upon the whole, I cannot look back with much satisfaction to the result of my most anxious endeavours, and am sorry to say that my confidence in the effects of medicine, in certain circumstances of disease, is rather lessened than increased by the little experience which I have had.

I have the honor to be,
Sir,
Your obedient and humble servant,

(Signed) J. HASTIC,
Assistant Surgeon,
2nd Batt 25th Regt.

TRICHINOPOLY, *1st July* 1811.

No. 8.

Q. 1. When and where did the disease first attract notice ?

A. Generally from the Southern Division in the Chuckragerry, Arvacourchy, Pollauchy and Darapooram Taluqs.

Q. 2. Has its progress been in the direction of any prevalent wind ?

A. Its direction has been north—the prevalent wind is the western.

Q. 3. And if so was the country wet at the commencement, or did the winds blow from countries where heavy or partial rains had fallen ?

A. The rains fell in the country itself in unusual quantities in last February at an untimely season. The natives consider that the waters are in a great degree poisoned by the addition of the numerous deleterious plants &c. which are washed into their streams or springs; the plants having at the time the most active effects, whereas according to the regular course of the season they are from their tender state less noxious.

Q. 4. Has there been any general or unusual disease among cattle or other animals since this disease became alarming ?

A. None.

Q. 5. Are the members of a family generally attacked at once or only after one of them has been taken ill ?

A. Symptoms have mostly attacked one person first.

Q. 6. Are there marks of putrescency in the disease ?

A. None apparently.

Q. 7. What is its general period of termination when fatal ?

A. Nothing certain has been ascertained upon the point; 5, 6 and 10 days or a lingering intermittent of weeks have been common.

Q. 8. Are the bowels affected, and whether at the commencement or termination of the disease; and is the diarrhœa or flux severe, and whether attended with discharges of blood ?

A. A diarrhœa generally supervenes when the disease is fatal.

Q. 9. Has the disease been general over the provinces to the southward or in particular places, and can its commencement be traced to returning pilgrims or other intercourse of inhabitants?

A. It may be said to have attacked Coimbatore generally though not at the same time; it seems to have spread more by the atmosphere than by intercourse with pilgrims &c.

Q. 10. Has the disease been most partial among the huts of the poor, or equally prevalent in the more comfortable houses of the caste people?

A. All descriptions have felt its effects.

Q. 11. Are the European inhabitants attacked with the same disease?

A. Intermittents have appeared among the European residents.

Q. 12. Has there been any change in the grain or food of the country, by reason of diseased growth from the unusual fall of rain, or any other cause of this nature that can be traced.

A. None.

Bhavany, *9th July* 1811.

(Signed) W. GARROW.

MEDICAL EDUCATION OF WOMEN.

We have seen it laid down as an axiom that the noblest principle of life is change. All things change. The stedfast mountain crumbles down and its particles of soil are carried away by the hillside torrent to refresh and fertilize the plains below. Man changes from the child to the adult; from manhood to old age; from the mortal to the immortal. Kingdoms, dynasties and forms of social life change and alter their condition. To remain without change is impossible; changes constantly occur even under our own observation. Old things are passing away—nay in many instances they have passed away. We do not now find the home-industries described to us by our elder relatives. The progress of arts and manufactures has rendered unnecessary the home arts of spinning, baking and brewing. All these things are better done on the principle of division of labour, by organized agency specially trained for the purpose, each in its appropriate manufactory, in place of the individual efforts of the women of the family. No one would now don a homespun coat, or wear a knitted sock, when he can obtain a superior article at a less cost. Even were this not the truth, it is a fact that our girls are no longer educated with a view to the same after-life as was lived by their grandmothers. Some sixty or eighty years ago a woman was amply educated for an ordinary position in life, could she read her prayer-book and write a letter. No doubt, in many ways, woman was then, as she has ever been, a "help meet" for man; but how many a man must have regretted that the very one, whose

affection and respect would best fit her in every way to be his *alter ego*, was utterly unacquainted with even the elementary principles of the art, profession or trade by which he made the daily bread of the household! Man has an intellectual, as well as a physical and a moral nature. He needs sympathy with each part of his character and vocation to make his life substantially happy; and it certainly cannot conduce to his happiness to find his partner utterly unable to appreciate his labours, to exult in his successes or to sympathize, with true womanly tenderness, in his failings, Hence arose a desire among men that their daughters should be better educated. The old ideas passed away, and in a short space of time the girl's curriculum was well nigh as arduous as the boy's course of study, while it was a good deal more varied. Our daughters were taught to know and appreciate their own language, to read the history of their own and other lands, to converse in French and other modern languages and to cultivate the accomplishments which serve as the recreation of life. Recently, during the past ten years or so, lectures have been given at all first-class schools on the elements of geology, botany, chemistry and other physical sciences. The seed thus sown fared like other seed; in some "it yielded an hundredfold", springing up with such vigour as to beautify and adorn all the girl's future life. Henceforth, she had ample resources within herself: no place could be dull; no time hang heavy on her hands: the stones, the flowers, the silent stars, all suggested thoughts which were companions in any solitude or leisure hour. The thirst for knowledge once awakened is insatiable; and where the seed takes root thus kindly, the woman is a better, because a more intelligent, member of society, a fitter wife to her husband, a more capable mother and guide to her children. In other cases

of course, we shall find that the good effects of the impression once received remain all but passive in the mind, and yet the woman is fitted to sympathize with her husband, even although she may not have the power actually to aid him. Thus something has been gained. The power, though passive, is still real; and it is clearly an improvement on bygone days.

The progress of manufactures and the changes in social economy have buried with the past the spinning, knitting and sewing that filled up the leisure hours of our grandmothers and that made their lives happy aud useful in their day and generation. Our girls are no longer fitted for this work; nor is there any scope for such ability did the knowledge exist. The result is in some cases very sad. Our daughters are in too many instances aimless, idle and unhappy. They have no proper or beneficial occupations; and the time which is so valuable, the young fresh hours of life, when every faculty is well strung, the imagination most vivid and the physical constitution at its best, are frittered away in an objectless existence, or in the pursuit of so-called pleasure. This is not the case with our sons. Their school career, their college course and the business of actual life demand their best energies. They become useful, earnest, and self-reliant; while the very girls who are to be the companions, the wives, and the mothers of the future, have no other device to wile away their precious time, but the perusal of empty novels, or the absurd imitation of birds, beasts, and flowers, called "Fancy Work;" or perhaps they are driven to effervescent fits of pseudo-piety, the only alternatives to which are reckless flirtation and the slow poisoning process of uncontrollable ennui. There must be something essentially wrong in such a state of things. Why should all other labour have a definite end, all other seed-time an abundant harvest, and only the

long years and hard earned money spent on a girl's education have no fruition? These considerations, even were there no others, should lead the present generation to seek some useful and honourable career for its daughters as well as for its sons. In some cases, perhaps in many, there is an absolute necessity for the girls of a family to aid in the common effort to earn the household bread. The daughters of our English mechanics, labourers and small farmers, know well that they must turn out into the world and do their best to maintain themselves in decency and comfort. They have no false shame in using to the best of their ability and knowledge the heads and hands that nature has given them. They are, as a general rule, diligent in their calling and faithful in the exercise of the little committed to them by the Great Master. It is when we come to a step higher in the social scale that we meet with sad instances of the want of an acknowledged career for the girls and women of the day. Perhaps one girl, braver or better endowed by nature than the rest, tries a situation as governess, but notwithstanding all its drawback, the profession of governess is much overstocked in England; and there is no room for it in India. To take the lowest view of it, in the language of the old Jew, it does not pay. For many years however no other opening could be thought of at home; and thousands of ladies, well-born, well-bred and well-educated, were sacrificed in this profitless manner. We are aware that these remarks are more applicable to the circumstances of England than to those of India, but the principles of education and its good or ill results are the same there as here. We are most thankful to find that there are now several openings at home to a useful and happy career for women, whose birth and education would render unbearable and irksome the

duties of domestic servants, shop-girls or needle-women. England, conservative and tenacious to the back-bone, hesitated long ere she followed the example set by foreign nations; but the real misery caused by want of means and wan tof employment has at last told its lesson; and we now find English women busy in printing-presses and book-binding rooms, directing the wondrous telegraph or copying hard-worded folios in lawyers' offices. Many doors of honest and hopeful toil are thrown open to them; and the women of England, to their credit and advantage, have proved themselves both willing and able to avail themselves of these several sources of industry and honest bread-winning.

There is another sphere of usefulness to which we would now specially call attention—one which, in its appeals to the best attributes of a woman's nature, far excels all others—one which has claimed the attention of women since the earliest historic ages, and of which one branch at least was under the direct protection and patronage of the ancient Queen of heaven, Juno Lucina! We refer to the most humane of all, the healing of the sick, the soothing of the anguished, the comforting of the distressed. The medical profession is one of the noblest that man or woman can be called on to exercise. It appeals to our three-fold nature, and every one who, even in the humblest of its grades, exercises this calling aright, should be better, more learned and holier, from the daily ministrations to suffering humanity. In the preliminary scientific examinations the mind of the embryo physician is strengthened, cultivated and trained to a degree far beyond the mere book-knowledge he may acquire. In the subsequent course of lectures delivered by the heads of his profession, he is directed how to apply this knowledge, and by clinical ex-

perience, by patient watching and accurate observation by the bedside of the sick, and in the diligent prosecution of *post-mortem* studies, he gains that insight into the construction of man and the workings of nature which truly fit him to be a high-priest of the healing art. "The eye only sees what it brings the power of seeing." From sharing in the labours, trials and honours of this profession, women have long been debarred—debarred no doubt as much by their own ignorance and want of system as by the objections raised against them by the members of the medical profession. All this is easily understood if we remember the class of women who professed to have any medical knowledge. They were for the most part aged women, to whom age had taught neither sobriety, honesty nor the power of governing their tongue. They were utterly uneducated and prejudiced to a fearful degree, women who eschewed cold water and fresh air and who, in the hour of emergency, were altogether unfitted to aid the medical man in the simplest of operations. No wonder that the highly educated and refined doctor shrunk from being associated with those wretched specimens of womanhood, devoid of knowledge, ordinary sense and common good-feeling. These women seldom set up, as the village barber did, to be "bone-setters," or "bleeders," or domestic surgeons; they confined themselves to midwifery and the nursing of the sick. How they were ever tolerated by medical men as their co-adjutors is a matter of marvel; but we must suppose that they were put up with simply because no fitter helpers were forthcoming. The case is altered, or rather is altering now: women of all ranks show themselves eager for medical tuition, from the uneducated woman whose highest ambition is to be a good nurse, to the highly educated and well-born women who swell the ranks of the Sisters of Charity, sincerely de-

sirous to render help in as intelligent and as perfect a manner as possible.

There have been many objections raised against the admission of women to a medical career—some of them no doubt of great weight and deserving of serious consideration: others again merely frivolous, and sprung from mistaken notions of propriety or from desire to let things be as they are. Some of the faculty are opposed to the medical training of women, on the ground that they must share the class-rooms of the male students and that it by no means beseems a woman's modesty and delicacy of feeling to acquire from a male teacher, and amid male fellow-students, any knowledge of anatomy, midwifery and other kindred subjects. This is an objection that comes home to every woman desiring tuition, to every father who would like his daughter trained to the most noble of professions. We hold, however, that this objection is founded upon a mistaken notion as to what is, and what is not, true delicacy of feeling. We would put our opinion forward with due respect for the opinions of others, but to our mind, the whole body is a monument to the greatness and wisdom of Him who made it; and no right-minded man or woman could make the highest manifestation of God's creative might the subject of unseemly jest, unholy thought or undesirable allusion. We think that the evil—if evil there be—exists only in the imagination of the morbid, not in the subject which demands the best efforts of the mind. Further, we do not see how, in a properly conducted class-room, under the supervision of a teacher who himself felt the solemnity and responsibility of his profession, the pupils could ever behave in any but a becoming manner. Another objection frequently urged is that women are deficient in nerve and strength; as to the latter, we believe that skill is more in request than strength in a doctor; and

for nerve or quiet, silent stedfastness of purpose, we think that women are, at least, as well endowed as men, if not more so. No doubt we shall find individual women, as well as individual men, who feel faint at the sight of a streaming wound or a repulsive sore. Perhaps more women than men might plead guilty to this charge ; but no one chooses a profession without some regard for his, or her, personal feelings ; and we may feel assured that a woman who willingly undergoes all the study and all the practical work demanded in hospitals may be trusted to have nerve enough for even an alarming crisis in after practice. Then as to moral courage, as to whether a woman can have the heart to resolve on some painful treatment, and to carry it out firmly, steadily and tenderly withal, not ceasing for the trying cries of her patient or the possible entreaties of those around her, we believe that there are many such gentle, yet firm-minded, women who will not shrink from duty merely on account of its disagreeableness. Again, few medical men, even those who bear the highest reputation, ever undertake an operation of extreme difficulty without the advice and co-operation of a brother professional ; and we cannot suppose that any medical man would refuse his counsel and assistance because the individual seeking it was a woman instead of a man. Another objection frequently urged is that the training and profession of a doctor are utterly incompatible with the duties and responsibilities of a wife and mother. We are quite willing to admit the force of this objection in many cases ; nor can we conceive a more undesirable and pitiable state of things than exists in the home where husband and children are neglected, while the wife and mother, forgetful of her duties and truest pleasures, is engrossed with other pursuits, studies and cares. We contend, however, that this is no valid objection against the ad-

mission of such women as desire it to a medical career. We know that all women do not marry, some perhaps never have the chance, and some by a peculiar idiosyncracy, have no inclination. Now there can be no possible objection to these women entering the medical profession and throwing into this channel all the energy and enthusiasm that will otherwise be frittered away in profitless pursuits, that can give no solid pleasure but which tend more than any other circumstances to make them those peculiar, crabbed and disappointed specimens of humanity called "old maids." Supposing, however, that a female medical student or a lady-doctor marries. Will she be a worse wife or a worse mother? Have her studies made her more or less competent for the general duties of life? We assume of course that she gives up all special prosecution of the profession as a matter of gain or constant occupation. We believe that she will make a better wife and be a better mother. The knowledge of the healing art will still remain, and husband, children and friends may be the gainers by her kind and gentle ministrations. The arguments in favour of giving women a medical education are many. A sick man longs for the gentle touch and friendly sympathy that none can bestow so well as a woman. Woman indeed is man's natural nurse; she is the first that soothes his infant ailments; she is the one who composes his limbs and closes his eyes for the last long sleep. A woman's hand is peculiarly adapted for some operations—those especially where a small soft hand is preferable, and less liable to entail injury, than one of larger size and rougher mould. In all circumstances knowledge is power; and in some cases, the mere tying of a handkerchief and tightening the impromptu ligature with a twig may suffice to stay inordinate hæmorrhage from a divided artery, when the patient must assuredly die were assistance

delayed many minutes. We do not mean that all women who study medicine should practise for gain: in the higher ranks, it were most undesirable that a woman should do so; but no one is the worse for knowing what should be done in cases of emergency and knowing how to do it. No one will be more thankful than the doctor to have all things made ready to his hand. The last argument we shall adduce to-day is, that taught or untaught women will ever be employed especially by the poorer classes, in one most important branch—midwifery. It is only necessary to look back on the past annals of midwifery in England, and the constant mal-practices by native midwives in this country, to make us all agree, that so far as this branch at least is concerned, women must be scientifically and thoroughly taught. A series of articles published in *The Lancet* for April, May and June last, will show us something of the horrible barbarities common in England, so long as midwifery was practised by the so-called midwives. Here, in India, there is scarcely a medical man who could not confirm a well-known practitioner's statement to us—" they bring here women whom they have actually killed by their ignorance and cruelty and then expect us to deliver them in safety, though the womb is ruptured or other fatal injuries inflicted!" The subject is full of interest; but we have written as much as space will permit. We shall therefore stop for the present, with the hope of continuing the subject in a future issue.

HONORARY REWARDS FOR MEDICAL SERVICES.

It is right that the attention of the Medical Profession in India should, every now and again, be

called to the relations existing between the Government of India and its medical servants, in regard to the distribution of Honorary Rewards.

The time has long since gone by, when the officers of the Medical Department were refused the decoration of the Order of the Bath, and the war services of medical officers, both of the British and Indian Medical departments, have of late years been fairly enough acknowledged in this respect. But in regard to the more modern decoration of the Star of India, which is in no respect a military order, but one instituted for the special purpose of honoring good and efficient service or marked distinction in every department of the State, it seems to us that the services of officers of the Medical Department have hitherto been strangely lost sight of or neglected, in the distribution of the Companionship of the Order. So far as we know the only two medical officers of the Indian service who have hitherto been selected as Companion of the Star of India, are Dr. W. Mackenzie, late of the Madras Medical Department, and Dr. Joseph Fayrer of Bengal. Dr. Mackenzie's war services were varied and numerous, and had been already recognised by a Companionship of the Bath when the additional honor was conferred upon him. The bestowal of the honor on Dr. Fayrer would appear to have been due quite as much to his distinguished war services in Burmah and Lucknow, as to his established repute as a scientific and practical surgeon, and his acknowledged position as leading practitioner in the metropolis of India.

In neither of these two instances does it appear to us that the decoration of the Star of India has been conferred for other than purely military services, and we have no hesitation in declaring that the practical limitation of this honorary reward to those of the Medical Department who alone have had the opportunity of distinguishing themselves in

war service, is unjust and contrary to the tenor and spirit of the statutes of the Order, as established by Her Majesty Queen Victoria.

To show how unfairly the new Order is shared in by medical officers, we may be permitted to allude to the case of a gentleman of the Bengal Medical Department, of whom we know nothing more than the testimony already recorded of his public services by the Government of India. In a recent "Resolution" of the Government of India, it is declared that "in the districts of Kumaon and Gurhwal, until about twenty years ago, the ravages of small-pox were frightful"! "Not a year passed in which the Government did not hear of the populations of large villages being more than decimated." A thoroughly efficient system "of vaccination was, however, commenced "under Dr. F. Pearson, now Superintendent General "of Vaccination, North-west Provinces. The result "of the admirable measures adopted by that officer, "and pursued with the greatest judgment and per-"severance through a course of years, has been that "small-pox has almost ceased to exist in Gurhwal "and Kumaon. The prejudices against vaccination "have, for the most part, vanished and the people "are generally not only willing but eager to have "recourse to it."

Such is the unsolicited testimony of the Government of India to the services of Dr. Pearson—to services pursued under every discouragement through "a course of years," and although the results of his labours have been to free the hilly districts of the Sub-Himalaya from epidemic small-pox and to preserve to the State, as tax-payers and producers, thousands of valuable lives yearly, this eminently useful public servant has not up to the present time been deemed worthy of an honorary distinction like that of the Star of India. If Dr. Pearson had expended a like amount of patience

and perseverance in the perfection of a devilish instrument for the destruction of human life, and had succeeded in making his invention applicable to warfare, we doubt not but that he would have been made a G. C. B., and probably a Lord of "Kumaon or Gurhwal," in recognition of his labors.

Or had he confined his energies to smart newspaper writing, and to lampooning his official superiors in "green letter pamphlets," it might possibly have been deemed a matter of public policy to dub him a C. S. I., with the view of keeping him in good humour; but being merely a successful worker in the great field of preventive medicine—a great preserver, and not a waster of human life—the great Government of India by its public acts tells him that he is unworthy of an honor that was expressly intended by the Queen for such as he, but which strangely enough has often come to be conferred on men, who by thought, word, or deed, have never conferred the smallest benefit on their immediate dependants, or the world at large.

Some of our daily contemporaries have been lately discussing why it is, that with so many advantages in the way of pay, promotion and pension, the Indian Medical Service should be so little attractive to the students of the schools at home. We think the answer is to be found in some degree in this unfair withholding of honorary rewards from medical men, which in other departments of the State are freely enough offered for special and distinctive service. Mere pay, promotion or position, in themselves, are not enough to attract ambitious spirits.

A medical man, under any circumstances, can only distinguish himself from his fellows, either by the zeal and knowledge he brings to those hygienic measures, which act favorably on the health of the masses of the population, or by his skill in the detection of, and successful treatment of disease. For long

and distinguished service in either of these two great divisions of the healing art, it is surely but reasonable that the medical officer, should be in no worse a position for the receipt of honorary awards, than the mere soldier, or civilian, or native chieftain, who do their duty creditably according to their respective lights.

The case of Dr. Pearson, we have specially alluded to, and we trust he will pardon us the liberty of the reference, under the circumstance of the public acknowledgment of his services by the Government of India; but there are doubtless other Medical Officers in India, who by their past labours and contributions to professional lore, are equally deserving of official recognition, and in regard to these officers we think the Head of the Medical department in each Presidency should be called upon to submit to Government occasionally, the names of those of his subordinates, whom he considers deserving of honorary distinctions. No doubt it is essential that honors of this kind, to be valued, should not be too freely given away, but if the names of medical officers are never brought before the Government for awards of this nature, there must be something wrong in the system or method of distribution, and the sooner the wrong is remedied, the more satisfactory will it be, both for the Government, whose interests are involved in honoring unusual talent or ability, and the Medical Department generally.

CHOLERA PROSPECTS.

The southward movement of cholera which all through May, June, July and August has been steady and continuous appears at length to have received a temporary check. The official returns show

that cholera has already occupied a good part of the Bombay Presidency, Central India, the Deccan and the Northern Districts of our own Presidency, so far south as the Godavery river. In the Kistna District up to date the disease has been limited to a few villages in the hilly taluqs. In the town of Kurnool two fatal cases had occurred during September, both in strangers coming from infected tracts of the Nizam's country. In the old fort of Raichore in the Doab between the Kristna and Tomboodra rivers, the disease has been established, but Railway communication with this place has not apparently had the effect of hastening the southward movement of the epidemic. A great feast is at the present moment in progress at Tripaty, to be followed by another at Conjeeveram, and it is by no means improbable that these festivals may be attended by cholera outbreaks considering the number of pilgrims who flock to them from the north. On the whole however we are inclined to the view that the prospects of an immediate outbreak in Southern India are not very clear. That the epidemic will by and bye be renewed in the Deccan and our North Districts is pretty certain, and when this renewal takes place we must be prepared for an extension of the epidemic in a southward direction.

SANITARY REPORTS.

A local contemporary in a recent issue has characteristically insinuated that we are not impartial in our criticisms of the Bengal and Madras Sanitary Reports ; that we systematically praise the latter and condemn the former, not on their respective merits, but according to their origin. We notice the impertinence, merely because it appears to be intended to convey an imputation that the supposed pheno-

menon is due to the connexion of the Sanitary Commissioner for Madras with this Journal. We simply state in reply that that connexion has long since ceased. As to our competence to criticise impartially professional papers we believe we are at least equal to any of our contemporary's contributors.

We have no hesitation in adding that Mr. Cornish's last Report which the *Madras Times* has shown itself incapable of appreciating and which we hope to notice at greater length in our next issue, is one of the most able and valuable Reports of its kind which have been published since Sanitary Commissioners were appointed.

MEDICAL MISCELLANY.

The Blood-crystals and their physiological importance.

By S. WATERMAN, M. D., New York.

The blood-corpuscle is the highest developed organized cell known. Its atomic weight and complex composition are the marvel of the analytical chemist. The discovery that these blood-corpuscles contain a crystallizable substance is of recent date. The first observations were made by Reichert, Kolliker, and Funke, and still later by Lehman, who gave to these crystals the name of "Blutcrystalle" (blood-crystals). This physiologist was, however, but partially aware of the great physical importance and function of this crystallizable albuminoid, for in his *Handbuch der physiologischen Chemie*, he says, "that owing to the entire absence of knowledge respesting the chemical constitution of this substance, we are unable to form any opinion regarding its genesis."

Even as recently as 1858 Rudolph Virchow did not assign to these crystals any special function. He noticed the fact that they behaved in certain respects like organic substances, inasmuch as they became larger through the action of certain agencies, and smaller through that of others, without any change of form. He was also aware that the form of crystallization was very different in different classes of animals, and he adds, "that hitherto it has not been possible to discover any satisfactory reason for their existence, or to obtain any insight into the nature of their substance. And yet he knew the fact that these crystals were affected by oxygen and carbonic acid precisely as the blood is; that they become bright red with oxygen, and dark or bluish red with carbonic acid. In common with the former erroneous views of writers upon this subject, the coloring pigment of the blood was described by him as hæmatine, yet Lehman had already demonstrated that the insoluble substance so rich in iron is not found as such in the blood, but that it is in reality a product of decomposition of the true pigment of the blood, now known as hæmato-crystalline, hæmoglobin, or cruorine.

The great practical importance which attaches itself to the solution of the inquiry regarding the nature and function of this substance and others, must be my apology for making it the subject of some general remarks.

The spectroscope, which may now be considered as having

fairly entered into the service of medicine, has thrown a flood of light upon this and kindred inquiries, and has revolutionized many theories formerly entertained regarding the mysterious processes within our economy; and the results already obtained cannot fail to exert a definite influence upon our conception and treatment of disease.

Recent researches, aided by spectroscopic observations, have demonstrated that the blood-crystals, the hæmato-crystalline, are actively at work in the economy to sustain the processes of respiration, oxidation, and oxygenation; that through their instrumentality alone the oxygen of the air is attracted and bound to the blood-corpuscles, which by the heart's action is carried into the intricate recesses of the capillaries; there they give up their oxygen to the oxidizable tissues, with which they form energetic combinations; that in return for its oxygen thus given up, the hæmato-crystalline as energetically combines with carbonic acid, the product of combustion, which acid it carries back to the heart and lungs for final elimination. It has been fully demonstrated by experiments, that so long as the hæmato-crystalline remains the same in quality as well as quantity, the supply of the oxygen to the economy is subject to relatively small oscillations; and with the increase and decrease of this substance, or with any change of its integrity, rises or falls the degree of vitality in an individual's life. That it is beyond any question the hæmato-crystalline, and not any other substance of the blood, which enters into and sustains the vital exchanges between oxygen and carbonic acid, has been fully proved by spectroscopic observation. Hæmato-crystalline in solution is able to absorb oxygen as well as carbonic acid with the greatest facility. It can exist like the blood itself in a double state of oxidation, corresponding to arterial and venous. It can be oxidized and deoxidized at pleasure; it presents the same absorption bands as the blood does, and in the exact part of the spectrum it enters into precisely the same combinations with other irrespirable gases; and all and every optic appearance which blood presents when acted upon by chemical agents, are also faithfully reproduced when the same agents act upon a solution of hæmato-crystalline.

As to the absolute quantity of hæmato-crystalline, experiments made show that in the total volume of the blood in man 9 to 12 per cent. is contained; in the moist corpuscles, freed from serum, it rises to 18 and 20 per cent.

In reference to the rapidity with which oxygen is absorbed by this hæmato-crystalline, we refer to Pflueger's highly instructive experiments upon dogs. He forced these animals to inhale pure nitrogen gas. In 30 seconds the highest point of dyspnœa was reached. At this point some blood was abstracted under great precaution, and tested for oxygen. It was found that its quantity of oxygen had been reduced to a minimum, being 1 to 2

per cent., whilst the blood abstracted from the same animal, immediately before it inhaled the nitrogen, contained 18·6 per cent. of oxygen. As soon as these animals were permitted to inhale again pure air, the dyspnœa disappeared, and they seemed to be as well as ever.

Preyer made the observation that one gramme of hæmato-crystalline had the capacity to bind 1·27 cubic centimetre of oxygen; and Hoppe Seyler determined that the blood of dogs contains, on an average, 13·79 per cent. of oxygen. Pflueger gives the amount of oxygen contained in the human arterial blood as 16·9 per cent. Blood-serum contains of this gas only 01·—02 per cent. of oxygen. The more compact the blood, the greater the amount of hæmato-crystalline, and so the reverse. In many animals, especially in those that hibernate, the quantity of hæmato-crystalline diminishes gradually during the winter's sleep; and we find, on examination, that their blood has lost much of its density.

According to the analysis of C. Schmidt and Hoppe Seyler the hæmato-crystalline from dogs has the following composition :— C 53·64, H 7·11, N 16·19, S 0·66, Fe 0·43, O 21·02, $P_2.O_5$. 0·91, alkalies 0·04—100·00. These proportions differ in various animals and man, but not to a very great extent.

Hæmato-crystalline crystallizes in beautiful rhombohetric plates, at times also in prisms of a beautiful red color. They cannot be obtained free from the coloring pigment, owing to the extraordinary tenacity with which it clings to the hæmato-crystalline.

One of the most interesting properties of hæmato-crystalline is its capacity to combine with destructive energy with many irrespirable gases, whereby its own integrity is sacrificed, and its life-sustaining power is lost for ever.

These combinations are, unlike those into which it enters normally with oxygen and carbonic acid, transitory and easily effected; on the contrary, they are irrevocably permanent, and any further absorption of oxygen, when thus combined, becomes absolutely impossible. This fact is evidenced by various crystalline forms of peculiar consistency and durability. With carbonic oxide it forms carbonic oxide hæmato-crystalline; with prussic acid, cyanite of hæmato-crystalline, and so forth.

Hæmato-crystalline is the most indestructible substance known. No matter how long it has been mixed with fluids undergoing putrefaction, it retains its characteristic features, especially its optic relations, as evidenced by the spectrum test. I look upon this stability and indestructibility as the most important, nay, principal factor of animal life, and any pathological condition affecting this stability must also affect the stability of life itself.

All these interesting and demonstrable facts have been ascertained by means of the spectroscope. By its analytical power

we have become acquainted with the changes these blood-crystals undergo when acted upon by various chemical agencies, and thus obtained an insight into the processes of life which a decennium ago we had no hope of ever obtaining.

Some interesting points, however, still await explanation. Under the spectroscope the hæmato-crystalline of animals and birds and fishes produces like optic relations, yet we know they differ to some extent in their composition and their forms of crystallization. The spectroscope can throw no further light upon this inquiry, and we may suppose we have arrived at the limit of an investigation of a substance so subtle in its composition as to defy further recognition. Thus the blood of man and of many carnivorous animals crystallizes in prismatic and rhombic columns and plates. The blood of the guinea-pig, of the rat, and the mouse in beautiful tetraheters; the blood of the squirrel presents hexagonal plates; in fishes we have fine prismatic needles, and so on. They also differ in different animals in solubility and sinking capacity.—*Medical Record.*

George Thomas—A curious case.

Dr. S. B. Merkel, of Philadelphia, introduced to the section* George Thomas, a colored man who could play such queer tricks with his heart and his belly that Profs. Pancoast and Gross had found this case worthy of examination, and the latter had hinted that he was probably in league with the Devil. He was born in Brazil and raised in London; had spent some time in Germany and at Paris, where, as at London, he had attracted scientific attention; and he had now taken up his abode at Frederick City, Md. He claimed that he could stop his heart, "throw" it into different parts of the abdomen, and "roll" the latter about the navel. The last peculiarity had been discovered by his mother when he was six months old. He got his living by exhibiting himself, and seemed anxious for a while about his pay; but, satisfied at length that the hat would not be empty, he lifted the curtain and opened the show.

First he made the abdominal wall undulate by a peristaltoid movement of the recti from above downward, there being about one and a half, or possibly two and a half, waves visible at once. The motion became very rapid, and was kept up for a minute or more. (He said he could do it all day.) Then he reversed the action, sending the undulations from below upward; and thus he alternated several times. Next he "threw his heart" into the belly, and a swelling like a phantom tumor appeared above the crest of the right or the left ilium at will. Finally he "stopped his heart," until several observers said they could neither hear nor feel it.

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* American Medical Association. Section of Surgery and Anatomy.

The Special Committee on the case reported as follows :—

Dr. Moore, of Rochester,—We have made a very careful examination of this case, but have had no time to put our report in writing.

First, we directed our attention to the heart. We find the heart itself grossly large, and the main arteries also greatly distended. The impulse of the abdominal aorta is very readily and very strongly felt when the subject is lying upon the table. The arteries of the wrist are abnormally large.

When the boy undertakes to suspend the action of the heart, we find that action growing less and less and less, until it becomes imperceptible both to the ear and to the finger, showing certainly a very great diminution in its force.

With reference to the alleged transposition of the heart from point to point we observe these facts : When the attempt is made to "throw the heart," as he says, upon the left side of the abdomen, the right side is seen to become very much indented, and the left side to become a little extended. But we also note that there is a suspension of respiration, and a state of powerful tension of the whole of the muscular system. Synchronous with all this we find a very decided increase of the heart-sound over the tumor, while the ear of a second observer is kept upon the thorax, and the sound is still heard over the normal position of the heart. We observe similar phenomena, simply reversed, when he attempts to throw the heart upon the right side.

These are the facts. Our inferences from them are, perhaps of no more value than would be those of any one else.

It is possible that, by the drawing downward of the diaphragm, the pericardium may be so elongated and narrowed as actually to compress the heart from the sides. It may also be supposed that, besides this mechanical action, there is an element of will acting in some peculiar way upon the heart through the nervous system.

With regard to the act of "throwing the heart" into the abdomen, as is claimed, that claim is by no means admitted. We have stated to you the fact, however, that there is an increase of the sound over the tumor ; and this seems to us to be developed as a result of the extraordinary muscular tension. It is easy to understand, I think, that the compression of the abdomen, under this strain of its muscles, would have the effect of bringing the abdominal walls, the spleen, and the heart into very close relation with each other, and of increasing greatly the facility of transmitting sound. We are disposed to think this the true explanation, since the heart is still to be heard at its normal position at the same time that its sounds are so distinct below.

As to the peculiar action of "rolling the belly," it seems to me the result of prolonged training, commenced in early life. This has enormously developed the recti muscles, so that when relaxed they feel like a great mass of dough under the fingers, and has given them a power of vermicular motion precisely like that of a snake or an eel. Indeed, I am not sure but this case may throw a little light upon some speculations of the transcendental anatomists. One of these, as you know, is that the lineæ transversæ of the recti are the rudimentary homologues in man of the abdominal ribs of some lower animals—all we have left of them. Now these give an opportunity for each of the short muscles between them to act by itself; and by bringing them successively into action, the vermicular motion is produced.

One word more. There is no motion of the chest in breathing, or scarcely any. You tell the boy to take a long inspiration, and he immediately expands the abdomen into a great tumor, while the thorax remains perfectly quiet. This shows the wonderful action of his diaphragm—even more wonderful than the power of, and control over, the other muscles of the abdomen.

Dr. Horton asked whether the sound in the abdomen might not be due to the pulsations of the abdominal aorta.

Dr. Moore.—We thought of that, and it is possibly so.

Hydrate of Chloral in Traumatic Tetanus.

Dr. Joseph R. Beck, in the *St. Louis Medical Journal*, gives a summary of all the cases he has read of in which hydrate of chloral was used in traumatic tetanus. The following table shows the results :—

No.	Reported by	Mode of Treatment.	Whole No.	Died.	Recovered.
1	W. B. Cluness ...	Chloral alone ...	1		1
2	M. Verneuil ...	Chloral alone ...	1		1
3, 4	MM. Dubreuil, Lavaux, and Onimus.	Chloral and continuous current.	2		2
5	Dr. Dufour ...	Chloral alone ...	1		1
6	M. Guyon ...	Chloral alone ...	1	1	
7	M. Le Fort ...	Chloral alone ...	1	1	
8	Mr. Tay ...	Chloral alone ...	1	1	
9	E. R. Denton ...	Chloral, belladonna, and potas. bromid...	1		1
10	Thomas G. Duncan..	Chloral and Calabar bean ...	1		1
11	Preston, Peter ...	Chloral and Calabar bean ...	1	1	
12	John W. Ogle ...	Chloral, belladonna and ice to spine ...	1		1
13	Mr. Croft ...	Chloral alone ...	1		1
14	Mr. Paget ...	Chloral alone ...	1	1	
15	J. Suydam Knox ...	Chloral alone ...	1		1
16 to 22	C. Macnamara ...	Chloral alone ...	7	6	1
23, 24	M. Garnies ...	Chloral alone ...	2	2	
25 to 34	Dr. Widerhofer ...	Chloral alone ...	10	4	6
35	F. Auchenthaler ...	Chloral alone ...	1		1
36	My own case ...	Chloral alone ...	1		1
		Totals...	36	17	19

In the *Berliner Wochenschrift* in 1870 Dr. O. Liebreich stated that while different surgeons had made trial of the curative

value of the hydrate of chloral in cases of trismus, without any favourable result, he had in some cases, by the use of 3·5 grammes of the article, succeeded in causing an entire relaxation of the affected muscles. Dr. Liebreich considered that chloral does not act by removing the cause of tetanus, but simply by counteracting its effects, and that its use must, therefore, be persisted in so long as the muscular spasm continues to recur.

Dr. W. D. Yandell, the president of the American Medical Association, arrives at the following conclusions :—

1st.—That traumatic tetanus occurs in males in the proportion of four to one, and tends to recovery oftenest in females.

2nd.—That tetanus is most fatal in persons under ten years of age ; that it is least fatal between ten and twenty.

3rd.—That traumatic tetanus usually supervenes between four and nine days after the injury, and these cases represent the largest mortality.

4th.—Recoveries from traumatic tetanus have been usually in cases in which the disease occurs subsequent to nine days after the injury.

5th.—When the symptoms last fourteen days recovery is the rule and death the exception, *apparently independent of the treatment.*

6th.—Of all the forms of tetanus, that appearing in the puerperal state is the most fatal.

7th.—That chloroform, up to this time has yielded the largest percentage of cures in acute tetanus.

8th.—The true test of a remedy for tetanus is its influence on the history of the disease. (*a.*) Does it cure cases in which the disease has set in previous to the ninth day ? (*b.*) Does it fail in cases whose duration exceeds fourteen days ?

9th.—That no agent tried by these tests has yet established its claims as a true remedy for tetanus.—*Medical Press & Circular.*

Syphilis in the Inferior Animals. By E. Andrews, M.D., (Professor of Principles and Practice of Surgery in Chicago Medical College.)

The distinguished advocate of syphilisation in Paris, Dr. Auzias Turenne, proved, as he supposed, by inoculations, that while the inferior animals could have soft chancre, they were incapable of constitutional syphilis. This conclusion, though resting solely on the narrow basis of one man's experiments, appears to be accepted by all the eminent syphilographers of Europe ; and being the prevailing doctrine, I have myself often quoted it as true.

On consulting a number of leading works on Veterinary Surgery, I find no allusion to syphilis except in Gamgee, who doubtfully speaks of certain primary sores, but of no secondary in

inferior animals. A veterinary surgeon of this city, however, informs me that he has met three cases of what he considers well marked constitutional syphilis in breeding animals.

The first case was that of a bull in England. The first symptom was a chancre on the penis, accompanied with inflammation and swelling, and followed by secondary eruptions on the skin.

Case second was on a celebrated imported bull. The first symptom was a discharge from the prepuce, with swelling and inflammation. This was followed, first by moist ulcers in the mouth, and later by eruptions with large scabs on the skin.

Case third was that of a boar which was supposed to have a primary sore, which was followed by eruptions on the skin. The veterinary surgeon above mentioned says that gonorrhœa is very common in bulls.

These three cases are not enough to bring us to a decisive result, but they show that the subject needs a reinvestigation. Domestic animals are certainly less subject to syphilis than men; but they may, after all, have it in a mild and modified form. If experiments should prove the latter hypothesis, the question would immediately arise whether this modified form could be used like vaccinia, as a prophylactic against syphilis proper. Who will make the experiment ?—*Ib.*

Death from pyœmia after the divulsion of stricture.

Dr. Keyes exhibited a specimen* of death from pyæmia after the divulsion of stricture. A Scotchman, aged forty, was last month sent to hospital from the workhouse. He was a stout, heavily built man, and complained of stricture with cystitis. A number 11 bougie (French scale) was readily passed and, as the patient desired to be relieved of his trouble, a Thompson's divulsor was introduced, and screwed up to 30. The patient did not complain of any pain, until a No. 25 sound was passed, when he also had a chill. A subcutaneous injection of morphia was made into one of his arms. Shortly after this he passed into a condition of fever, which lasted until death. The chill lasted five minutes. His pulse went up very rapidly, so that the next day it was 130—140. His skin was hot and dry from one end of the disease to the other. He drifted into a condition of delirium on the third day and his skin became yellow twenty hours before he died.

It was discovered that there was a little tenderness beneath the scrotum and on the third day a lump about the size of a marble was discovered. The patient died on the ninth day.

At the autopsy it was discovered that there was extravasation of urine; that there had formed pus in the meshes of the

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* Before the New York Pathological Society.

scrotum : that there was a small abscess in the floor of the urethra, just in front of the stricture. There were also three abscesses in the prostate. The bladder was hypertrophied to a certain extent, and gave evidences of the existence of chronic cystitis. An abscess the size of a marble was found in the summit of the left lung; the liver and spleen were soft, but contained neither abscesses nor infarctions. There was no trouble with the kidneys. The cavities of the pleuræ contained serous effusion, with a few floating flocculi.

The specimen was of interest as showing the results of divulsion, viz.: tearing through of the mucous membrane and of the stricture tissue, and also as a case terminating with pyæmia as the apparent result of the operation. About five days after the operation the patient was recognized by two others, who had seen him in a strait-jacket, with violent *mania â potu*, three days before his admission to the hospital. This fact explained the reason why the condition of the patient was such as to invite suppuration so readily. In fact, this condition was very manifest in the behaviour of the hypodermic punctures, which degenerated into diffuse suppuration. The chill evidently did not have anything to do with the pyæmia as an initiative.

The heart was enlarged, the lungs œdematous, and the pericardium was adherent to the stomach.—*Medical Record.*

Cancer cured by Electrolysis.

Dr. Mussey read also a paper* on *Electrolysis in Cancer*, illustrated by photographs and a wax model. He had been led, by the success of Dr. Neftel, of New York, to try the electrolytic treatment upon several cases of cancer; and though he could not claim uniformly successful results, still he had become convinced that much could be done with this treatment, if the cases were judiciously selected, and the agency employed properly appreciated and carefully applied. Scirrhus seemed to yield the most readily, and encephaloid to be the most intractable. As to batteries, he had found one of Remak's, made in Berlin, give the steadiest current; but it was inferior in most respects to a Stöhrer battery made by Curt W. Meyer, of New York. Drescher's had proved less steady, and more troublesome to keep in repair.]

Great patience and perseverance were required in all these cases, on the part of both operator and patient; and most of his patients had given out before he had effected what he deemed possible for them. One, however, a woman of infinite pluck and endurance, had satisfied him that a malignant tumor could be cured by electrolysis; and others now under treatment confirmed this view.

The woman referred to was thirty-six years old, in good

* Before the American Medical Association.

general health. She had been suffering from a painful tumor on the back of the hand for about a year prior to the spring of 1870, when she consulted Dr. Mussey. The tumor had continued to increase, under various modes of treatment, and amputation of the hand had been proposed. On examining the tumor Dr. Mussey found it $2\frac{1}{4}$ inches long by $1\frac{3}{4}$ wide, and elevated from $\frac{1}{4}$ to $\frac{3}{4}$ inch above the surrounding surface. The whole hand was greatly swollen. The diagnosis of encephaloid cancer was made, and its removal at once determined upon.

An incision was made over the centre of the tumor, in the line of the middle metacarpal bone. The skin was dissected up, and the extensor tendon of the middle finger sacrificed, but the other tendons were saved. On opening the sheath of the tumor it was found highly vascular, and hæmorrhage was profuse. A mass of encephaloid was removed. The middle metacarpal bone had wholly disappeared, and its adjacent metacarpals were involved, so that at least half their substance had to be scraped away. The wound was thoroughly cauterized with pure carbolic acid, and packed with lint. It was dressed afterwards with a carbolic acid solution, ten grains to the ounce of water.

Soon encephaloid granulations began to spring up luxuriantly, and the Doctor decided to try electrolysis. He at first used three needles attached to the negative pole of the battery, the positive electrode being placed in the palm of the hand. The current of six cups was passed for five minutes, that of eight cups for two minutes, and that of ten cups for three minutes. The next day the growth was larger than before, and he applied a flat rectangular electrode $1\frac{1}{2}$ by $\frac{1}{2}$ inch, covered with a single thickness of moist lint, upon the mass, and passed the current from—cups for fifteen minutes. This was kept up daily for four days, when the electrode was brightened and used naked, and the application continued daily for a week longer. Then a circular electrode about $\frac{1}{2}$ inch in diameter was employed, being pressed into the mass. Each time the tumor would shrink a little, but the next day it would be as large as ever, and after a week it had actually gained in size. The woman was willing to endure anything to save her hand, and the Doctor, in no wise discouraged, now took a smaller electrode, $\frac{3}{4}$ by $\frac{7}{16}$ inch, and thrust and bored it into the mass as deeply as he could, and then applied the whole power of sixteen cups for twenty-five minutes. This produced a great frothing from the evolution of gas, and the tumor began to shrink more after each operation, so that at the end of a week it was perceptibly diminished. In a week more of these daily applications the diminution was so great that he gave a favorable prognosis. From the first of May until July the applications were made every other day. At the latter date the wound was cicatrized, and the patient was required to call only twice a week In August she was using the hand to sew, and wearing the thim

ble upon the middle finger. This fatigued the arm a good deal, but the fatigue was relieved by electricity. She continued to call once or twice a week until Nov. 15th, 1870, when the treatment was stopped. It was now twenty-two months since the cicatrization of the wound, and sixteen months since the last application of treatment, and the disease showed no sign of return.—*Ib.*

Tœnia Solium and Tœnia Lata in a Child three years old.

A case of this character, occurring in a boy three years and four months old, is reported by Dr. Joseph Ganghofer, in the *Kansas City Medical Journal.* The child had excessive craving for carrots, of which he would daily consume large quantities, both cooked and raw. After persisting in this unnatural appetite for six weeks, a *tœnia solium* of about eleven feet in length was passed. The morbid appetite of the patient still continued, and, on account of the largely distended abdomen, the carrot treatment was advised. Within two weeks another worm was passed; this time a *tœnia lata* ten feet long, which came away entire, inclusive of the head.

Dr. Ganghofer remarks that the use of carrots as a domestic anthelmintic in cases of ascarides and lumbrici is no novelty, but their efficacy in dislodging the different varieties of tape-worm has never before been established. It would appear that the large amount of saccharine matter contained in the vegetable must have sickened the parasite, and thus have caused its detachment from the walls of the intestine.—*Ib.*

On the growth of the Nails as a means of prognosis in Cerebral paralysis.

Dr. S. W. Mitchel (*American Journal of Medical Sciences*) states that he has observed in several cases of paralysis that the nails of the limbs of the affected side, on the occurrence of the accident, ceased to grow. This was proved by staining the roots of the nails with nitric acid. He was able to predict, in seeing after a time a white line of nail making its appearance, and before there were any other signs of improvement, that power was about to return to the limb, and that voluntary motion would shortly be restored.—*Ib.*

MEDICAL INTELLIGENCE.

(General Orders by the Governor in Council.)

Furlough—Warrant Officers.

23rd August 1872.

No. 888 of 1872.—It having been announced in G. G. O. No. 207* of 1869, under the authority of the Right Hon'ble the Secretary of State, that the furlough rules of 1868 shall apply to all warrant officers holding veteran or honorary commissions, that Conductors and Sub-Conductors shall be entitled to furlough on sick certificate, and that corresponding furlough shall be granted to warrant officers in the Subordinate Medical Department, and to those holding the honorary rank of Assistant Surgeon, the Right Honorable the Governor-General in Council is further pleased, under the authority of Her Majesty's Secretary of State for India, to announce that those classes will be allowed to reckon the following periods of leave, whether taken in India or Europe, as service for pension :—

15	months	in 12	years'	departmental service.
20	„	14	„	„
24	„	16	„	„

Warrant officers holding that rank on this date may, should they elect to do so, continue on the rule hitherto in force, and reckon all leave in India as service and all leave out of India as against service. This option will not be given to men attaining warrant rank after this date.

Applications from warrant officers for leave to Europe must be accompanied by a duly certified statement of the applicant's service, and of the condition in respect to service for pension under which the furlough is taken.

The provisions of this Order will have effect from this date.

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* Madras G. O. G., No. 77, dated 2nd March 1869.

(General Orders by the Commander-in-Chief.)

Sanitary Returns.

No. 119.

28th August 1872.

G. O. C. C. of 31st July 1865, page 342, directing the submission of No. 1, Sanitary Reports of Regiments, Batteries, &c., (War Office Form 517 of 1864) to this office, is hereby cancelled, and Commanding officers of regiments and Batteries are requested, on receipt of the above returns in duplicate to forward *both* copies direct to the statistical branch of the office of the Inspector-General of Hospitals, British Forces, at the Presidency, and not to the Adjutant General as heretofore.

Musketry—Medical Department.

No. 99.

4th September 1872.

Attention is invited to Horse Guards, General Order, No. 15, dated 1st February 1872, regarding the attendance of medical officers at target practice.

It is, however, to be distinctly understood, that if a medical officer is not actually on the ground he must be at hand and available at the shortest notice.

Whenever the troops are encamped for rifle practice on account of the distance of the range from barracks, a medical officer is to remain in camp, while the practice is going on.

Gymnastics—Medical Department—Sanitary.

No. 106.

(*a*) G. O. 58 of 1867.
(*b*) ,, 368 of 1868.
(*c*) ,, 303 of 1869.

Horse Guards' G. O. No. 26 *Gymnasia*, dated the 1st March 1872, is re-published for general information and guidance :—

I. Medical officers in charge of regiments that have been quartered long enough at any station possessing a gymnasium, to enable the men to undergo a training, will specially report on the effects, if noticeable, of such training on the muscular development and health of the men on their leaving the station, and as to the general influence of gymnastics in promoting a vigorous constitution. In fur-

therance of this duty they will frequently visit the gymnasium, and witness the measurements of the recruits on entering the course, and also the measurements on its termination.

II. The principal medical officer will refer to the subject in his annual sanitary reports, giving the substance of the information furnished to him by regimental medical officers, with any remarks thereon that he may deem necessary, concerning the utility of Gymnasia.

(*a*) Madras G. O. C. C. 17th April 1867, p. 93.
(*b*) „ „ 15th January 1869, p. 10.
(*c*) „ „ 4th April 1870, p. 94.

Passage—Pay and Allowances.

No. 114.

The following letter from the Secretary to the Government of India, Military Department, No. 827, dated the 13th April 1872, is published for general information and guidance :—

In reply to your letter No. 45C, "*Pay*," dated 8th ultimo, submitting the recommendation of the Right Honorable the Commander-in-Chief, that the provisions of the letter from this department, No. 172, dated 8th June 1871, be made applicable to all officers proceeding home on duty when detained at Bombay, on condition that the State is not put to the charge of a double payment, I am directed to acquaint you, for His Lordship's information, that the Right Honorable the Governor-General in Council has decided that an officer ordered to proceed to England on duty, under circumstances which, by the regulations, preclude his receiving Indian allowances after the date of receipt of the order, should be provided with passage on the first troop vessel leaving Bombay after that date that he can arrive in time to proceed by : and, for the period that may intervene between that date and the day on which he must leave his station to catch the said troop vessel, he may be retained for duty with his regiment or battery, receiving, whilst so employed, the Indian allowances which he was drawing when the order reached him.

2. But the Indian allowances in question cannot be admitted unless the officer proceeds, as above, by the first troop vessel ; nor under circumstances which will involve a double charge upon the State.

Transport—Medical Dept. Sub-Women and Children.

14th September 1872.

Military Department, No. 374, dated 7th May 1872, to the Quarter-master-General.
* G. O. 51 of 1872.

The Government of India have ruled, that the indulgence of free passage by river steamer sanctioned* under certain conditions to the families of Hospital Assistants may be held to apply to the cases of Hospital Assistants proceeding to join appointments at foreign stations, such as Aden and the Persian Gulf, save in cases where they may be going abroad to join permanent appointments.

This order is to be entered as para. 244*b* and G. O.† 51, dated 15th March 1872, as para. 244*a* of Transport Regulations, Part I.

Railways—Passages.

No. 125.

The following notification, by the Government of India in the Financial Department, is re-published for general information:—

No. 3507, *dated* 17*th May* 1872.—The Governor-General in Council is pleased to prescribe, in supersession of all former rules on the subject, the following rules specifying the class of accommodation to be granted to the several grades of Government servants when travelling free, on duty by rail:—

I. All officers drawing salaries of not less than Rupees 350 a month shall receive 1st class accommodation.

II. All officers drawing salaries of less than Rs. 350 a month, and not less than Rs. 25 a month shall receive 2nd class accommodation.

III. All officers and servants drawing less than Rs. 25 a month, and not less than Rs. 15 a month shall receive intermediate class accommodation when available, otherwise 3rd class accommodation. All others shall receive 3rd class accommodation.

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† Madras G. O. C. C. 2nd July 1872, p. 208.

The necessary alteration to be made in para. 15, Transport Regulations, Part II., and the above order to be entered as para. 15 A.

Dress.

No. 132.

The white tunic laid down in G. O. *107 of 1872, will be worn by all unemployed Infantry officers of the Staff Corps and Indian Army.

Dress.

No. 134.

The Commander-in-Chief desires it to be distinctly understood, that the white uniform worn by officers at mess during the hot-weather months is simply a mess dress, and must not be worn at entertainments elsewhere, except under the special sanction of the officer commanding the station.

This order applies to all branches of the service.

Leave—Service, Officers—Passage.

In continuation of G. O.† 57 of 1872, the following letter from the Government of India, Military Department, to the Government of Bombay, No. 59, dated the 27th May 1872, is published for general information :—

"In reply to your letter, No. 2145, dated the 8th May 1872, enquiring how the time passed by an officer detained at the presidency for passage in a troop-ship, beyond the usual preparatory leave, is to count towards leave and service for pension, I am directed to state, for the information of the Government of Bombay, the Right Honorable the Governor-General in Council is pleased to rule that in cases where the detention is really unavoidable, the time should not count against an officer, but be considered to come within the preparatory leave."

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* Madras G. O. C. C. 3rd June 1872, page 169.

† Madras G. O. C. C. 2nd July 1872.

Leave.

No. 172.

With reference to G. O.* 304 of 1871, the Commander-in-Chief is pleased to notify that every officer who proceeds to Bombay, with the view of obtaining furlough on medical certificate, must arrive at Bombay three clear days before the assembly of the Medical Board, (which meets every Monday and Thursday). In order that the terms on which he is entitled to leave may be known, he must be provided with a statement of his leave and service, prepared by himself, in accordance with the orders marginally noted.

A. G. Cir. No. 99 of 1867, para. 8.
G.G.O. No. 34 of 1869, para. 4, clause II.

*Madras, G. O. G. 7th November 1871.

List of Children.

On account of whom Payments have been notified by the receipt of Paymaster's Statements, &c., from 31st August up to this date for securing the following rates of pension.

Names of Subscribers.	Children's date of birth.	Sex.	Rates of Pension secured.	To what period.	Payments how made.
J. T. Williams ...	5th August 1872..	Male ...	Half ...	To 18 years ...	By Donation and Subscription.
J. Henderson ...	9th October 1872..	Female...	*1-3rd ...	To 21 years ...	By Donation.
Do. ...	Do. ...	Do. ...	Full ...	From 21 to D. or M., &c.	

N. B.—The rates of pension marked thus* are additional to those previously secured.

MEDICAL FUND OFFICE,
FORT ST. GEORGE,
30*th September* 1872.

CORRESPONDENCE.

Water Analysis.

To the Editor of the Madras Medical Journal.

Sir,—I trust you will spare me a small space in the Journal that I may very briefly reply to Mr. Nicholson's rejoinder in your last number, concluding so far as I am concerned, this discussion.

Under the first heading of the rejoinder Mr. Nicholson still insists upon holding me solely responsible for "the scheme," and to this I have only to reply that my coadjutors did take a large part in the compilation, and for example I may state, without I think breaking confidence, that the very process for alkalies of which Mr. Nicholson has had so much to say was inserted by one of them in the place of the barium method which stood in the original manuscript.

Under his second heading, Mr. Nicholson has modified the statement, by the accuracy or otherwise of which I elected to stand or fall. That statement was, to use his own words, "The author of the scheme here distinctly commits himself to the statement that ignition of sodium sulphate with ammonium chloride changes the former into sodium chloride. Little or much sulphuric acid can make no difference in this reaction. *This statement is without the slightest foundation in fact,* (the italics are Mr. Nicholson's). Sodium sulphate ignited even with a considerable excess of ammonium chloride shows no signs of change, the weight remains unaltered, and the solution of the residue gives no indication of chloride being present." That Mr. Nicholson was wrong in making this statement he now acknowledges, but to that statement, and its inaccuracy, I hold him, and, therefore, I do not renounce the scheme. As to Mr. Nicholson's experiments they are not in accord with results which I obtain, but I reiterate (see my letter in the August number of the Journal) that I have not advised that in practice chloride of ammonium equal *only* to twice the weight of the sulphate of sodium should be employed. However, as to whether this conversion should be made use of in analysis, I am willing that, as against Mr. Nicholson, the scheme should be in accordance with Fresenius and Sutton. Moreover, as I stated in my reply, if the scheme were in error on this point, its usefulness for the analysis of potable waters would be but little impaired, for only in very exceptional cases is it needful, in making such examinations, to determine the alkalies.

Mr. Nicholson concludes what he has to say under his third head with a powerful tirade against my incompetency and blind faith in authorities. Now, as to authorities, I have referred to them so largely because in his original paper Mr. Nicholson seemed to charge me with ignorance of them, and because many of our readers must be unable to verify for themselves the accuracy or otherwise of our counter statements, and will, therefore, be glad to have the evidence of "the authorities" on the points at issue. As regards Mr. Nicholson's strong language, I regret he should have so mistaken the exigencies of the case as to believe that they compel him to the tone of criticism which he has adopted towards a brother Medical Officer, engaged like himself in serving Government to the best of his ability, and who was called on, in the course of his duty, to undertake a work which had to be carried on at great expense of time and labour, and under the pressure of other duties which were in themselves quite sufficient to occupy the time of any one man.

With reference to the case of the wells in Fort William, I think I can put it before Mr. Nicholson in such a way that he will acknowledge that I had fair grounds for my condemnation of them. And in the first place I can assure him that I have not been unmindful of marine impregnation as a source of impurity in the Fort waters—this he will see if he will refer to my reports on the tanks on the glacis, in which I have distinctly recognised the liability to such impregnation. But take the case of the Chowringhee Gate well. It is situated in a small ravelin, two sides of which are occupied by the huts of the married sepoys; in the centre of the ravelin is the sepoys' bazaar, and around the well full half the washing of the native regiment in the Fort was carried on; and I can say from personal observation that the vicinity of the well, notwithstanding the platform and drain, was always in a soppy state. Well then I had learnt from experience that whenever sepoys have used a well in this way for any length of time it almost as a matter of course becomes impregnated with saline matters. Further when I come to compare the waters of the wells in the Fort, I find in this one 20·5 grains of chloride of sodium to the gallon, while the Treasury Gate water contains 12·5 grains of chloride of sodium to the gallon, and that of the carefully preserved Sudder Bazaar well 5 grains only to the gallon. All these considerations, together with what I witnessed of the way

in which the wells were used, was quite sufficient to lead me to condemn them, especially since an abundance of comparatively safe water was readily obtainable, and because it has been a principle on which I have uniformly acted, that a water source should be rejected if it is exposed to any possible source of contamination. Acting as I have done upon this principle, I am ready to confess that I may have erred in condemning some wells, but the errors have been on the side of safety, and I have always avowed the principle which I have taken as my guide.

I am, &c.,

F. N. MACNAMARA.

CALCUTTA,
19*th September* 1872.

To the Editor of the Madras Medical Journal.

SIR,—I hope you will kindly allow this letter to appear as a postscript, or note to my letter of the 19th, for in that letter, I, by an oversight, omitted to notice Mr. Nicholson's statements in the second paragraph of page 206 of your Journal. That paragraph is so full of unfounded and disparaging assertions regarding me that I cannot pass it by. I quote it in full as well as a sentence from the top of the same page.

"But Dr. Macnamara with two years' experience of Indian water analysis, still laboured under the idea that nitric acid is always a product of animal pollution and that an excess of chloride is owing to the same cause. He finds a small amount of nitric acid and an excess of chloride, and at once jumps to the conclusion that the wells are contaminated by human and kitchen refuse."

"The fact is that Dr. Macnamara then as now took his chemistry and his hygiene out of an English book. He had seen it stated that in England nitrates when existing in any quantity, are generally the oxidized products of sewage contamination; he did not reflect that, possibly in India, the great producing country of nitre, the occurrence of nitrates in water may be quite normal. He did not think of ascertaining by experiment whether such might be the fact, but he bows at once to "the authorities" and condemns every Indian water that happens to have nitric acid in it. Speaking of the excellent spring water of Murree (page 32 of same report) he says, "the springs being fed by the surface drainage which sinks into the subsoil of the hill, of course a considerable amount of sewage matter mixes with the water, and becoming oxidized, is represented by the nitric acid which is present in it." These waters, of most excellent quality, happen to contain a small amount of nitric acid, estimated at one grain per gallon; accordingly they are declared to be polluted by oxidized sewage.

Such mistakes might be excused in a beginner just out from England, imbued with the 'previous sewage contamination' theory; but to find

them perpetrated by the superintendent of two years' systematic analysis is too bad. Dr. Macnamara might have been expected to learn something by experience during his campaign against the potable waters of Bengal: he appears to have learnt nothing. With a blind reverence for "the authorities" he made not the slightest use of the splendid opportunities before him; with unquestioning faith in home theoretical views, facts seem not to have existed for him; with an apparent incapacity for appreciating what is evidence, he condemned good waters wholesale."

I must accuse Mr. Nicholson of deliberate misrepresentation in writing as he has thus of me not only in the sentence I have quoted, but in others of like effect in the same paper.

I will quote from the report, containing that on the Murree waters on which Mr. Nicholson comments, proving that he has that report, and has read it.

Peshawur.—Mackeson's well—"the water of Mackeson's well must be pronounced good and wholesome." This water as may be seen on referring to the table of analyses contains nitric acid.

Attock.—Referring to the water of well No. 5, "there is not, however, anything in the composition of the water of the well, as shown by its analysis to render it unwholesome." This water, see Table of Analyses, contains nitric acid.

Ferozepore.—Referring to the Hospital well, "the water contains a large amount of nitrates, salts, which are not present in the waters of the neighbouring wells, while it contains double the quantity of readily oxidizable organic matter, and of chlorides that they do. This being the case, I strongly urge the recommendation made in my former report for the provision of another well for the supply of water to the sick in Hospital." It is evident that I condemn this water on far other grounds than that it simply contained nitrates.

Ajmere.—"The water in use at the station is generally considered of fair quality." All the wells reported on contain nitric acid. (See Table of Analyses.)

Jubbulpore.—"The water of No. 118 appears to have got a bad name, yet the water, as shown by its analysis, is very good." The water, as shown by the Table of Analysis, contains nitric acid. The water of the other wells supplying the European Troops is also good. The water of almost all these wells, see Table of Analyses, contains nitric acid. "Nitric acid is present in almost all the well waters of the station, and it is also present in the soil; there is apparently

no reason to attribute its presence in the waters to sewage contamination."

Saugor.—"Analyses show that the water of most of the wells in use by the European Troops is fairly good; the best is that of a well, unnumbered, which is near No. 11 barracks. The well is a new one, and its water is decidedly more pure than that of the neighbouring wells; it however contains a large quantity of nitrates, but as the amount of organic matter is not large, and but a small proportion of chlorides, I have no doubt that the nitrates result from the oxidation of organic matter which may have been deposited in the soil in past times."

Nowgong.—"It appears from Dr. Thomson's analyses that the *unpolluted* water of the station contains 15 grains or less to the gallon of dissolved constituents, including about $2\frac{1}{2}$ grains of common and from a half to two grains of nitric acid, the nitric acid is present not only in the vicinity of the barracks, but in the uninhabited part of the cantonments." Here I speak of waters containing much nitric acid as being *unpolluted.*

Nagode.—"The supply is abundant, and where the wells are taken care of is fairly good." The water of all the wells contains nitric acid. (See Table of Analyses.)

Seetapore.—"The nitric acid is present in large quantity in the water of some of the wells, and may be to a certain extent derived from sewage pollution, but I suspect it is present in the soil over the district in which Seetapore stands, and I do not, therefore, look upon its presence in any of the waters as necessarily indicating artificial contamination."

In the face of such passages as the above, (and if Mr. Nicholson has it, in the face of others of similar import in my fifth report) Mr. Nicholson has the audacity, for I cannot use any milder word, to pen and publish the sentences which I have quoted in the beginning of this letter—and this is the brother Medical Officer, and Professional Chemist, who, relying on such mis-statements as the above, has been doing his best in effect, I hope not wittingly, to injure my professional reputation in the journals here and

at home. I will say no more, I leave Mr. Nicholson to his own reflections, and to the judgment of your readers.

I am, &c.,

F. N. MACNAMARA.

CALCUTTA,
21*st September* 1872.

A MEDICAL FUND.

To the Editor of the Madras Medical Journal.

SIR,—I shall feel obliged by your kindly giving insertion to the following.

I see that at the recent Examinations many gentlemen have passed for appointments as Assistant Surgeons in the Indian Medical Service. Some have by this time gone through the course at the Army Medical School and are already under orders for their respective Presidencies, and others are about proceeding to Netley ; all of whom it is to be presumed will in time come to augment the numbers in the Junior Grades of the service.

The attention of all those, if this should haply reach them, as well as that of the Assistant Surgeons who joined the Service since 1860, I earnestly request to the fact that no such thing as a Fund Military or Medical now exists, in which we are allowed to participate, whereby one could hope to make a moderate provision for widow or children in the event of death. The Madras Fund has for its fortunate members a branch called the Annuity branch, which provides an annuity on retirement of either £200 or £400 a year, according to the length of service &c. of the applicant. Of course there is no such thing now for us and when one speaks of his exclusion from these privileges, however willing he may be to pay for them, as a hardship and a grievance, he is sometimes met by the statement that the Junior members are better off now-a-days than they were formerly both as regards pay and promotion. This I deny, as although we get promotion after a certain number of years, and the pay is enhanced so far as the actual number of rupees goes, still I affirm that in the absence of a Fund, for which no concession that has been made to us compen-

sates, as well as some other advantages possessed in former days, we are not better off.

The increased rate of pay does not more than counterbalance the depreciation in the value of money, and the increased cost of living in India makes it simply impossible for one with a family to effect a saving of any consequence, to enable him either to make a proper provision for widow or children, or supplement his wretched pension and admit of his retiring in his old age, when he feels that he has little more Indian work in him ; and yet for these reasons hold on he must. Life Insurance as it is charged for in India makes it impossible for one with the moderate pay of an Assistant Surgeon, particularly if he has a family, to insure his life for an amount that would give his widow anything that she could, with a family, live comfortably upon and educate her children.

What we want then and that urgently, is a Fund, or something of a similar character under the support and management of Government, which would by moderate monthly deductions from one's pay as was done in the case of the old Fund give one the means of placing his family beyond the reach of want in case of his death. Government need make no sacrifice nor incur any expense, all I would ask is the establishment of the institution whatever may be its name and granting the necessary guarantee and supervision. This is a matter which vitally concerns a great many who are already in the service, and all those who are about entering it. Why the former have hitherto made no move in the matter I cannot understand, unless it may be that they trust to some lucky piece of legislation in the future to supply their wants, or to Governments seeing the necessity of it and doing for them that which the old H. E. I. C. did for its Officers and which unhappily was undone during the reign of Sir Charles Wood at the India Office. Why it was done away with I never could learn, unless it was to facilitate the amalgamation of the two services which was then talked about, but which came to nothing as every body knows.

If Government considered the rate of interest granted too high it might have abated its privileges in the case of the new admissions, and with the lessened advantages all would have been glad to join, on the principle that half a loaf is better than no bread. I think then it behoves all those who are concerned to either individually or collec-

tively do what in them lies towards the attainment of such a desirable object as a Fund. The heads of the Indian Medical Service in the three Presidencies are quite aware of our wants and would be, I hope, equally willing to help us, but I certainly think that the commencing move ought to be made by us Juniors.

With reference to the question of promotion it is not a cheerful one to dwell upon. It is true that we get promotion to the ranks of Surgeon and Surgeon-Major after a certain number of years' service, but beyond the latter grade I think I am not far wrong in saying, that 95 per cent of us will never go ; what with the reduction in numbers in the administrative grades, the age-disqualification, and the number of casualties that are likely to occur before the completion of 28 or 30 years' service, before which promotion to the Inspectorial ranks is not to be expected.

I venture to say that there are many retired Indian Medical Officers who are now living at home on a fair competence who would never have been able to retire were it not for those Funds from which unhappily so many of us are now excluded.

I am, Sir,

Your very obedient servant,

JUNIOR.

TO CORRESPONDENTS.

Assistant Surgeon L. C. NANNEY, H. M.'s 3rd Regt. P L. I.—*In our next.*

P. S. MOOTOOSWAMY, Native Surgeon—Manargudi—*In our next.*

Assistant Surgeon F. M. RICKARD—H. M.'s 25th Regt. M. N. I.—*Received with thanks.*

BOOKS, &c., RECEIVED.

Doctor, *August 1st.*

Medical Press and Circular; *August 7th, 14th, 21st, 28th.*

Journal des Connaissances Médicales, *August 15th, 30th.*

Jamaica Church Chronicle, *June 17th.*

Medical Record, *July 1st, 15th, August 1st.*

Report of the Sanitary Commissioner for Madras for the year 1871.

The Secretaries, ROYAL MEDICAL BENEVOLENT FUND SOCIETY OF IRELAND, *acknowledge with many thanks receipt of the following Donation and Subscriptions.*

F. J. McCarthy, Esq.	Donation	Rs.	20
W. T. Martin, M.D.	1872-73.	,,	10
W. J. Charlton, Esq.	,,	,,	5
E. A. Gibbon, Esq.	,,	,,	20
J. P. McDermott, Esq.	,,	,,	20
A. McClorg, Esq., A.B., M.B.	,,	,,	10

THE MADRAS

MONTHLY JOURNAL

OF

MEDICAL SCIENCE.

No. XXXV.—NOVEMBER, 1872.

ORIGINAL ESSAYS.

Art. XVIII.—*On the Antiseptic treatment of Small-pox.*

By Assistant Surgeon L. C. Nanney, H. M.'s 3rd Regiment P. L. I., Secunderabad.

Amongst the many discoveries and improvements that have lately taken place in Medical Science, nothing is more striking than the large number of newly invented preparations which have been recommended as remedies for almost all diseases, and the introduction of which has caused material change in the treatment of several maladies. There is, however, I regret to say, a strong tendency to apply them in an empirical manner; the new remedy, which has been of marked benefit in one class of diseases, being too frequently applied without discrimination to all. The result of this naturally being a failure in some instances and, what is much worse, most detrimental and even fatal in others, a prejudice may thus arise against the use of a remedy which, if judiciously handled, might prove of incalculable benefit, when restricted to those diseases to which it is specially adapted. A course must therefore be steered between the two extremes, neither rejecting the results of recent discovery, nor too readily admitting them as specific in all complaints. To further this end, the experience of all who have had occasion to adopt any newly recommended plan of

treatment possesses a certain value, and should be recorded for the benefit of others.

With this end in view I subjoin a few remarks on the Antiseptic treatment of small-pox by Carbolic acid—a remedy which, of late, has won for itself considerable reputation, and to which, during a recent epidemic, I gave a fair trial. The proportions in which I applied the acid were, as one to eight of oil, with which I caused the papules, vesicles, and vesico-pustules, to be painted with a feather or brush, three or four times daily; the result being that, in those cases in which the treatment had been adopted from the earliest stages of the disease, it was arrested at the vesico-pustular and never reached the suppurative stage. Even in cases that, at the onset, shewed symptoms indicating a severe attack, the vesico-pustules scabbed over and dried up, and the sympathetic irritation was exceedingly trivial, nor did pitting ultimately supervene.

Of twenty-five cases which were under my immediate observation in tents provided for the purpose, eighteen proved successful, having been treated, from the earlier stages of the disease, by Carbolic acid; one died from pneumonia. In the six other cases the disease had gained considerable ground before admission, and only one proved successful. Of eighteen cases treated in the Lines by my dresser, none of which had been brought forward at the commencement of the disease, five died, in which the Carbolic acid had not been tried, and two died under treatment. The majority of these, however, having been kept concealed until the disease had reached the confluent stage, with accompanying delirium, afford no fair criterion as to the value of the remedy. The sensation experienced by the patient, on the application of the acid, is a slight burning which speedily passes off, allaying all irritation. The odour, which is a peculiar one, cannot be considered unpleasant, when contrasted with the fœtid exhalations proceeding from those suffering from small-pox,

I have found the patients willing and even anxious for the application of the remedy, after once experiencing the results. In the treatment of the disease during this epidemic, I had the advantage of contrasting former experiences during three previous epidemics, one in India, two in England, in which different modes of treatment were adopted by myself and other medical men.

On several occasions I found the application of Carron oil to be extremely soothing in allaying the irritation; it did not, however, check the disease in its onward progress, though affording great temporary relief, and thus obtaining valuable rest for the sufferers, so essential under the circumstances.

My experience during these four epidemics of this virulent malady, has led me to attach great importance to preventative measures, of which vaccination, though doubts have recently been thrown on its efficacy, stands in my opinion pre-eminent. I have observed that it either wholly averted the disease, or caused it to assume so modified a form, that the patients were able to go about their accustomed duties, shewing the slight constitutional disturbance that existed. I could wish that the advantages to be derived from vaccination were more universally credited, especially among the native population; as however the dislike to it is not readily overcome, and small-pox is a disease which is frequently epidemic in this country, and indeed, of late, in all parts of the world, it is of importance that the few remedies that exist should be widely made known and carefully tried.

I consider the Carbolic acid a most valuable antiseptic and deodorizer, and can add my testimony to the efficacy of this plan of treatment. I am of opinion that Carbolic acid might also prove valuable as a prophylactic in times of epidemics, and might be applied in various forms in other diseases of a similar character.

Art. XIX.—*Contributions to the Practice of Midwifery.*

By P. S. Mootoosawmy, F. O. S. L., Native Surgeon, Civil Dispensary, Manargoody, Tanjore District.

Placenta Prævia.—Govindammall, æt. twenty, mother of three children, of whom two are living.

About ½ past 4 in the evening of the 15th March 1872, I was requested by a midwife of the town, a former pupil, to visit a female who was said to be in a dying state from flooding. As the woman lived not far from the Dispensary I saw her at once, and found her on the floor of a low miserable hut, without any bedding, and lying in a pool of blood, with ashes plentifully strewn about her. She was

perfectly insensible and in a state of extreme exhaustion, indicated by a cold clammy skin and imperceptible pulse.

On examination I found the vagina filled with clotted blood, on removal of which I ascertained that all but a small portion of the os had placenta adhering to it; that the os was dilated to the diameter of a rupee, and that the head was presenting. As the woman was in such an exhausted condition I administered arrack with broth, first plugging the vagina and applying a binder to the abdomen, and wet cloths to the vulva. The broth and arrack were repeated at short intervals, and re-action took place in about an hour. The pulse returned and the skin became warm; but consciousness was not restored. I removed the vaginal plugs, and found that the os uteri was well dilated, and the placenta almost entirely detached. I ruptured the membranes, and extracted a dead female fœtus by means of the short forceps. Cold douche to the hypogastrium, and grasping and kneading the uterus ensured contraction of the organ, and expulsion of the placenta. A compress was then applied, and the binder re-adjusted.

The woman did not recover her consciousness until the afternoon of the third day, when some symptoms of uterine inflammation presented themselves, and were subdued by treatment.

The woman made a rapid recovery, and left her room on the 17th day after her confinement.

Remarks.—There are several points of interest in this case to which attention might be drawn, and which might, perhaps, obtain for it a place in the columns of the *Madras Medical Journal.*

The first circumstance worthy of notice is the rapid recovery of the patient from the extreme state of exhaustion to which she had been reduced by the hæmorrhage. When she was first seen by me she was cold and pulseless, but in an hour after the administration of stimulants reaction was established and uterine action had taken place to the extent of dilating the os uteri and detaching the placenta, at least that portion of it in the cervical zone below what Dr. Barnes designates, the "Lower Polar Circle." Although the patient did not recover her consciousness quickly, she rallied wonderfully, and, notwithstanding the supervention of some untoward symptoms, she was able to leave her hut in little more than a fortnight.

The next important feature in the case is, I think, the absence of hæmorrhage after reaction had set in, a circumstance attributable, no doubt, to the contraction of the uterus and detachment of the placenta, which the unaided efforts of nature had effected. If, as some suppose, the source of the hæmorrhage is placental, or for the most part placental, it is difficult to understand how the detachment of this organ, consequent on reaction, was not followed by hæmorrhage; but if we believe, with Dr. Barnes, that "the great hæmostatic agent is contraction of the uterine fibre," then it becomes very clear that the contractile action of the uterus which disengaged the placenta from its walls, also closed the utero-placental vessels, and checked the flooding. The detachment of the placenta again favoured dilatation of the os, and the rupture of the membranes tended to increase uterine contraction.

The case of this poor woman may be adduced as an example of the reckless disregard of life brought about by the peculiar religious belief of the poorer and uneducated classes of natives. Enquiry into the history of the patient elicited the fact that about a month previously she was suddenly seized by flooding which soon ceased. This was ascribed to the female having in some way incurred the displeasure of a particular god, whose wrath was appeased by certain incantations, charms and offerings, which were had recourse to. Ashes were on that occasion, as on the present, plentifully strewn over her as part of the propitiatory ceremony, and she was made to drink a mixture of ashes and water. The cessation of the hæmorrhage was attributed to the acceptance of the offerings made, and all went well for a time. On the next occasion of the return of the flooding, the same means for its arrest were employed, but, unfortunately, in the opinion of the patient's friends, they failed to appease the wrath of the deity, and the woman was left to die.

Sixteen hours after she had been given up by the individual who performed the ceremonies, the services of a midwife were sought. None but the very poorest of the natives of certain castes will seek admission into hospital, when there is reason to fear a fatal termination to their illness, for when death occurs, their caste prejudices prevent their friends from conveying the corpse to their home prior to burial; and it is considered degrading to be buried from a public hospital.

ART. XX.—*Fibro-cystic tumour. Removal by operation.* By Assistant Surgeon F. M. RICKARD, H. M.'s 25th Regt., M. N. I.

Perumaye, female, aged 42, Kolah caste, was admitted into hospital, on the 26th April 1872, with the following history of her case. Four years ago she noticed a small swelling in the right breast. At this period the catamenia ceased and she suffered from slight constitutional disturbance for a short time. The swelling gradually increased, until she was prompted to seek medical advice. This she did and came to the Garrison Hospital in April 1871. The tumour had then attained a large size and extirpation was had recourse to.

The operation was performed on 30th April 1871, by Assistant Surgeon Smith, who was then acting for Doctor Fletcher the Garrison Surgeon.

I find the following entry in the hospital records.

Perumaye aged 42, female, Hindoo. Multilocular cystic tumour of right breast, was removed by Doctor Smith on 30th Apr. 1871. Weight 3lbs. 8 ozs.

The tumour recommenced growing about 8 months ago, and has increased very rapidly. Her health is much impaired and she suffers considerable pain and inconvenience; loss of appetite, restless nights &c.

Present condition with description of the tumour.

Dimension Right Side.

From upper part of spine to top of sternum 20 inches.

From middle of spine to ensiform cartilage 23 inches.

Circumferential measurement of tumour from anterior superior angle of right scapula to sternal end of right clavicle 23½ inches.

From top of tumour to base, 11 inches.

Left Side.

From upper part of spine to top of sternum 13½ inches.

From middle of spine to ensiform cartilage 15½ inches.

In order to render the description of the tumour easier to be understood, I have had two photographs taken of it. The first showing the whole of the upper portion of the body, with the tumour as seen from the front. In this picture, the tumour can be looked at, as in comparison with the trunk. The other photograph represents a side view of the tumour with the fungus-like projection which resulted from the giving way of the skin. The mass appears to take its origin, from a small portion of the mammary gland which was left unexcised, and grows upwards, on the ribs, until it reaches the axilla. It there widens laterally, filling up the axillary space, and forcing the arm upwards and outwards. The deformity is more apparent in front than

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ORIENTAL LITHOGRAPHIC PRESS MADRAS 1872.

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behind, by reason of the resistance made against the growth of the tumour, by the scapula bone and latissimus-dorsi and other muscles. Anteriorly the tumour is bound down very firmly by the pectorales major and minor and the fascia of the thoracic region. To the touch, it feels hard, smooth, and regular. Near the base, at the outer side, is a large fungus-like projection, about the size of the clenched fist, which was caused by the skin giving way about a week since, when there was considerable hæmorrhage. The consent of the woman having been obtained, I determined to operate and relieve her of the enormous mass.

The Operation.

On the 2nd Instant, assisted by Doctor Long, Doctor Ritchie, who also kindly administered chloroform, and Assistant Surgeon Harvey, who was then in the station, I proceeded to operate. The arm being drawn upwards, to above the level of the shoulder, and slightly backwards, I made one straight incision, from the centre of the axilla, down the outside border of the tumour to the fungus-like projection, which I encircled with two sweeps of the knife, at the same time being careful to remove enough of the unhealthy skin around the opening, to a width of an inch or more. I then completed the incisions by running another small one, about four inches long, at right angles to the commencement of my first cut and parallel to the clavicle. This finished the incisions. I then reflected back the flaps and endeavoured to get my hand between the tumour and the ribs, but was unable to do so, from the firm attachments that existed between them. Several layers of fibrous tissue had to be cut through before I could get to the ribs. When the latter were once reached the tumour was quickly dissected away from them. The great difficulty that then presented itself, was, to get the hand above the summit of the tumour, and thus detach it from the axillary space. After thoroughly dividing the pectorales major and minor, and cutting through numerous layers of dense fibrous looking tissue, I managed to get my hand above the tumour, and then partly by force and partly by the aid of the knife, the whole mass was turned out of the axilla. Little then remained, but to dissect the tumour away from the latissimus-dorsi, to which it was intimately adherent, by strong fascia and fibrous bands. Only one artery required ligature, viz., the long thoracic. There was a good deal of venous

hæmorrhage, which quickly subsided, on the bared surfaces being sponged with carbolic acid and oil. The flaps were then adjusted, and kept "in situ" with silver wire sutures, and the side dressed with tow soaked in Carbolic acid and oil. There was considerable difficulty in restoring the patient after the operation, and for some hours after the pulse was very low, requiring constant care and watching, and the frequent administration of stimulants. The operation lasted 40 minutes, 7 drachms of chloroform were used, by means of Bloxam's patent chloroform bottle. Not a single bad symptom presented itself and the patient made a rapid recovery. The flaps joined well on the exposed surface of the walls of the chest and healthy pus was freely formed. The patient was discharged from Hospital well, on the 2nd of June, just one month from the date of the operation.

Remarks.—The tumour on removal weighed 6 lbs. and when cut through presented a fibro-cystic appearance, but unfortunately no microscope was available, to form a definite opinion as to its real character. The real difficulty in the operation was found when it was necessary to get above the summit of the tumour. In fact, as the whole of the axilla was filled with the mass, and that mass firmly wedged into the space, by continual increasing force, caused by the growing of the tumour from below upwards, it was impossible to attain the object, without dividing the two pectorales. And even after division of these two muscles, great force, and some use of the knife was requisite, to tear away the mass from the subclavius muscle. After this was effected, the axillary artery was plainly seen beating, through a small thickness only of cellular tissue. A strong pedicle of thick fibrous tissue of nearly an inch in width and about $\frac{1}{4}$ inch in thickness, extended from the seat of the former operation into the substance of the tumour and thus retained it in its place, inferiorly. This pedicle had to be divided before the hand could be passed between the tumour and the ribs, at the beginning of the operation. In mentioning the instrument used for the administration of chloroform, I would add my testimony to the great value of Mr. Bloxam's chloroform bottle. It is exceedingly simple and so graduated, that the quantity consumed can be read off at any time. From the small quantity of the anæsthetic used viz., 3 vii, it will be seen, that there cannot possibly be any waste, when Mr. Bloxam's bottle is used. In con-

clusion, I would beg to state, that the Municipal Commissioners of Cannanore came forward with great generosity and kindness of heart, and placed the sum of Rupees twenty in my hands, to be expended in supplying the patient with comforts and necessaries, which the poor woman was greatly in need of, as she was a pauper, a class of patients for whom no provision is made by the Government in the Garrison Hospital.

Compound fracture of left Femur, from Gun-shot wound.

Raloo, male, aged 32, was admitted into the Garrison Hospital, on the morning of the 15th May, having been brought a distance of twelve miles, in a muncheel.

The following is the account that he gives of the accident. He was returning to his house about two o'clock in the morning, when about 40 yards from him, a man was coming in an opposite direction and obliquely, carrying a gun, with the muzzle to the front. He says that suddenly he felt a severe shock and great pain in his left thigh and at the same time heard the explosion of the other man's gun. On being hit he fell to the ground, but the other man ran away. He lay on the spot where he fell about an hour, until he was picked up by some people passing who removed him to his house.

On examination, the femur was found to be completely severed, about an inch below the great trochanter, and the bone much comminuted. There was a round wound where the bullet entered, about the size of a rupee in diameter, with the muscular substance bulging out of it.

No wound of exit could be discovered. The wound of entrance, was about one inch below the point of the great trochanter, and directly inwards. The probe was used carefully, but nothing could be detected, but broken up bone. No bullet could be felt. There was no hæmorrhage from the wound and the effects of the shock had all passed off. The injured limb was carefully placed on a double inclined plane iron-splint and the wound dressed with carbolic acid and oil.

20*th.*—Since his admission, the patient has been carefully kept quiet and in the same position. All swelling of the limb has gone, and the wound of entrance looks healthy, laudable pus being freely formed and evacuated. To-day, on again carefully examining the whole limb, a small round

hole was found, about the size of a 4-anna piece over the tuber-ischii of the same side. This hole must have formed since his admission, as he was carefully examined when brought to hospital, and nothing of the kind then existed. From this wound healthy pus is discharged. The latter wound to be dressed like the former.

25*th.*—On this date, two or three small pieces of bone came away from the wound of entrance, their structure being cancellous. Both wounds looking healthy.

June 12*th.*—Up to date, the patient has continued in the same position. Bed sores have been carefully avoided, by frequently bathing the back, loins, and buttocks with weak brandy and water. No pieces of bone passed away during the month, and union is firmly established. The patient's health continues good and his appetite remains unimpaired.

July 13*th.*—A piece of bone, half an inch in length, has come away, and the sore over tuber-ischii has healed. The wound of entrance continues open.

August 10*th.*—The splint was removed this morning; there is shortening of the limb about two inches and swelling over seat of fracture due to callus. External wound still open, no pieces of bone have come away since last report.

31*st.*—External wound is closing, discharge very slight. Patient insists on returning to his house and his friends have come for that purpose. I have desired him to return and show himself. General health perfectly good. Discharged.

ART. XXI.—GENERAL HOSPITAL REPORTS. *A Case of Suppression of Urine,* under the care of SURGEON-MAJOR J. L. PAUL, M. D., Surgeon to the General Hospital. Reported by E. F. Brockman, Resident Assistant-Surgeon, General Hospital.

Mooneappen, a ryot, aged sixty years was admitted into the General Hospital on the 28th May last with the statement that he was unable to pass his urine. In the hypogastric region there was an apparent distension, and without a careful examination in the out-patients' room being made, and because of the urgency of the case, the patient was admitted without any loss of time into the Surgical

Division. On a closer inspection of the case in the ward the fulness of the hypogastrium was not visible, and to strengthen the supposition that none of the urinary secretion was collected in the bladder, a large catheter was passed, but no urine drawn off. On enquiry the patient stated that he had scarcely passed any urine during the preceding seven days; and that what little was voided caused him to strain much. He denied having ever suffered from gonorrhœa; he stated that he was a temperate man, and that he had always enjoyed good health with the exception of an illness four years before similar in character to that from which he is now suffering. Native medical treatment at that time relieved him, but on this occasion it failed; on the occasion referred to the patient passed a few small calculi. On admission the eyelids are slightly puffed; he complains of a pain in the loins, and in the anterior wall of the abdomen in each inguinal region; pulse is quiet; he looks anxious, but is not drowsy; is rather slow in comprehending questions put to him, and in making replies. As above narrated, a large-sized gum-elastic catheter was passed but without removing any urine from the bladder.

Loins to be dry cupped. Warm bath.
To drink large quantities of barley water.

29*th May*, 6 A.M.—After cupping the loins yesterday, patient passed a few drops of urine. Eight leeches to renal regions. Barley water and imperial drink.

Temp. 100·8. Pulse 100. Resp. 30.

5 P. M.—Is in much the same state. Has drunk during the day two pints of barley water and two pints of Imperial drink. Took his food. Bowels acted once normally. Soon after the application of the leeches, patient passed about two drachms of urine. Heart's sounds equal in duration. Breathing sounds normal.

Temp. 100°8. Pulse 100. Resp. 32.
Haust. salin. purg. ℥iv. statim.

30*th May*, 6 A. M.—Bowels acted four times, but no urine was passed. The patient has passed a restless night and complains of a feeling of tightness which extends from the lumbar regions anteriorly to the fore part of the abdomen. During the night drank two pints of fluid. On testing the very small quantity of urine passed yesterday with heat and nitric acid, albumen was precipitated to the extent of one-

fourth part of the quantity passed. Complains of feeling drowsy. Skin is dry.

Temp. 99°. Pulse 94. Resp. 31,
Hot air bath.
Imperial drink O iii.
Barley water O iii.

℞ Potas. Acetatis gr. xv.
Vin. Colchici ♏ xv.
Infus. Digitalis ℥ ss.
Aquæ ℥ ss.
Quartâ quâque horâ.

5 P. M.—Bowels acted twice. No urine passed during the day. The hot air bath caused profuse diaphoresis. Is inclined to doze.

Cont. treatment.
Temp. 101°. Pulse 92. Resp. 33.

31*st May*, 6 A. M.—During the night passed urine six times, amounting in all to twenty-four ounces. Bowels have not acted. Urine is pale and cloudy, sp. gr. 1008, having an acid reaction and holding albumen in suspension. Feels much relieved. The feeling of tightness and distension has passed off.

Temp. 98°. Pulse 92. Resp. 30.
Cont. treatment.

5 P. M.—Total urine passed since 6 A. M, amounts to forty-one ounces. Patient is feeling more comfortable.
Cont. treatment.

6*th June* 6 A. M.—Bowels acted frequently during the night, the increased action being caused in all probability by the potash salts in the mixture and in the imperial drink. Urine has a sp. gr. of 1012, and suspends no albumen. Describes himself as being quite well.

7*th June*.—Absconded from hospital.

A Case of Vesical Calculus. (Phosphatic.)

Appavoo, a washerman by trade, aged sixteen, and residing at Washermanpettah, was admitted into the Elgin ward of the General Hospital on the 7th July 1872 under

the case of Surgeon-Major J. L. Paul, M.D., with the following symptoms. On attempting to micturate he experiences a scalding sensation, with an inclination to evacuate the bladder frequently. The urine is said to escape in small quantities and sometimes to pass by drops merely. He complains of hypogastric pains which are increased when walking or while engaged in the performance of the duties of his calling. The pain at the extremity of the penis is reported by the patient to be present as well as the occasional passage of blood with the urine. On admission, a No. 6 silver catheter was passed and the presence of a calculus in the bladder detected. On examination of the urine it was found to be slightly acid, and to contain a large quantity of mucus and pus corpuscles, and to have a specific gravity of 1010. Was ordered the following :—

℞ Ext. Opii. gr. ii.
ft. pil. Horâ somni sumend.

℞ Sodæ Bicarb. gr. xv.
Tinct. Hyoscyami. ʒ ss.
Aquæ ℥ iss.
ft. mist. ter in die sumend.

July 11*th*.—After dilating the urethra by silver catheters Nos. 8, 10 and 12, Sir Henry Thompson's small lithotrite was introduced while the patient was under the influence of chloroform, but all attempts at seizing the stone proved futile.

Rep. Pil. Opii. gr. ii.

July 13*th*.—Patient complains very much of pain during micturition. The pain is said to extend along the urethral canal, the perinæum and upwards along the spermatic cords.

℞ Enema Opii. Stat.

July 16*th*.—The pain continues to a greater or less degree since last date. The lithotrite was introduced, the stone was seized, and was found to measure about 1¼ inch in diameter. This was crushed, and two of the fragments were subsequently seized and crushed. The debris found in the bite of the instrument on being submitted to nitric acid and heat was found to be readily dissolved by these means.

Morphiæ gr. ¼, in solution.
to be administered hypodermically.

18*th July.*—Suffers from severe pain. Urine contains a large deposit of mucus with some gritty particles. Some febrile action present. Pulse small and quick. Tongue coated with a white fur. Morphia hypodermically.

℞ Acid. nitrici dil. ♏ xv.
Inf. Gentianæ ℥ i.
ter in die.

20*th July.*—Lithotrite again introduced, and three fragments were crushed.

Cont. treatment.

23*rd July.*—The lithotrite was introduced this day and two small pieces were crushed. A third large mass was felt, but could not be caught in the grip of the instrument.

Rep. mist.
Add. Tinct. Hyoscy. ʒ i.

28*th July.*—After dilatation of the urethra by a No. 12 catheter the lithotrite was once more introduced, but on account of the restlessness of the patient, the stone could not be seized. A slight hæmorrhage, which soon ceased, followed the withdrawal of the instrument.

1*st August.*—For the last two days has had febrile paroxysms and since yesterday diarrhœa has come on. For the former Tinct. Aconiti was ordered, and for the latter the Pulv. Cretæ Aromaticus cum Opio.

August 22*nd.*—Since the last date the patient has gradually improved, the febrile action has subsided, the diarrhœa has ceased, and beyond the symptoms caused by the presence of the foreign body in the bladder he has comparatively speaking been doing well. This morning the lower bowels having been emptied by a large warm-water enema and the patient having been anæsthetised by chloroform, the lateral cutting operation for removal of the stone was performed. The perinæum was deep and gave rise to a little difficulty in the detection of the groove of the staff. The stone was extracted by forceps. An elastic tube having been introduced into the bladder through the wound the patient was put to bed. The stone was almond shaped having one extremity fractured. The external surface is rough and has the appearance of a phosphatic calculus. On breaking it across the middle by means of a lithotrite, a small hard rough nucleus which resists the

force of the instrument stands out and presents the physical appearances of an oxalate of lime formation. The calculus weighed in its broken state ʒ vii gr. xiv.

September 23rd.—Has done well since the operation; passed urine by the urethra for the first time on the 30th ultimo. Since this date the wound has been gradually contracting and has now completely healed up. Is discharged from hospital.

ART. XXII.—*Notes on the Blood Sacrifices of the Hindoos.*

(Communicated by Inspector General, I. M. D.)

Woon District. By P. CHAMARETT, Esq., Civil Surgeon, Yeotmahl.

It lies between 19° 40′ and 20° 45′ North latitude and 77° 28′ and 79° 33′ East longitude.

It is divided into Yeotmahl, Darwa and Woon talooks.

The district consists of plains, plateaux and ranges of hills.

The principal rivers are the Wurda and Paynegunga with their affluents.

The population, 340,426 souls, principally consists of Brahmins, Hindoos, Brinjaras, Gonds and low castes.

The religion of the several castes is the same as prevails elsewhere. All the Hindoos, of every denomination, are worshippers of Mahdeo. The language of the District is Mahratta.

In the Woon talook, Telugu is the vernacular.

At present human blood sacrifice is never practised, but it is said that before the British rule some people used to offer human sacrifice when they knew that in a certain place great treasure was buried. Now-a-days, buffaloes, sheep, goats and fowls, are often sacrificed to several deities, both males and females.

A buffalo is annually sacrificed in every village by the Headman on the Dussera festival to a female deity called "Gaodavee." The buffalo is first brought to the headman's house, when he worships him with flowers, &c., he then takes a sword in his hand and strikes it on the muzzle of the animal and allows the blood to fall on the ground to appease, as he thinks, the wrath of the goddess Goadavee. The buffalo is subsequently led to every house in the village, when the owner pays something to the leaders of the animal. In the evening the beast's throat is cut on the south boundary of

the village and a drop of its blood is applied to the forehead of the headman, potail, deshpandia and deshmooks.

Blood sacrifice is never practised among Brahmins.

Hindoos often offer these sacrifices when small-pox, measles and other diseases prevail. People often go out of the village where, at a distance under some tree, there are a few stones covered with " Sindoor" or red lead " Seetala-davee." There they worship, prepare food for the day, offer it to the deity and partake of some as a *prasad* (favor). These people do not require any priests ; they perform the ceremonies themselves.

Earth, fire and water of some sacred rivers are worshipped. Fire is supposed to be the principal deity by Brahmins. When a Brahmin lad is invested with the sacred thread his principal duty is to worship fire ; he is ordained to keep it during the whole of his bachelorhood. When he gets married he does the same thing. By others of the Hindoo community fire is worshipped at the Holee festival. It is supposed to be a demoness in whose honor fire is worshipped at this feast.

Trees are worshipped by almost all Hindoos under the pretext that various deities live thereabout. The following are the principal plants and trees ; Toolshe, aola, peepul, banian, oomber, rui &c.

Serpents are worshipped by the Hindoos on the day called Nag or Naggur punchun. It is so named because it is supposed that on that day a husbandman was ploughing his field and in the course of his work he hurt a snake of the best sort ; enraged at the insolence of him, the snake destroyed his whole family except one daughter, who was at her husband's house and used to worship snakes. The snake told her what he had done, and said that as the snake is quite satisfied at her kindness, he has saved her and further promised that whosoever worships snakes on that day will be ensured protection against their bites. A serpent called Kali, said to have been slain by Krishna, is also worshipped at this festival. Within the last 25 years a new religion is being introduced in the province by the name of " Kalanki." The professors of this religion do not hesitate to do any thing prohibited by other Hindoos. Further particulars of this new religion will be furnished.

In this District, Brinjaras and Gonds abound, the former reside in " Tandas" apart from villages, and the latter resort to forests and ranges of hills. Of late they are much more

docile, much inclined to take service under Europeans, and yield in a considerable degree to the prejudices of the Hindoo.

The Brinjaris, as a class, are criminally disposed; all violent crime is traceable to them, and they reside for the most part separate from the other people, in small communities subject to the patriarchal rule of the Naik who is the most influential member of the "Tanda."

The habits of every resident in the Tanda are well known to this man, and without his permission no stranger can join the clan. Female infanticide was at one time considered a characteristic of the Brinjaris, but no proof or instance has ever come to notice.

The general report is, that a woman accused of adultery is put to death; this also is without proof.

There are in this district upwards of 300 Tandas, each containing from 10 to 50 families, or 28,395 souls. Although they conform to the Hindoo religion they differ much in social position. They rarely mix with the population, are bold and fond of sport, no festival, birth, marriage or death can take place without excessive indulgence in "Daroo and Tumbakoo," and their daughters are not married until they arrive to years of puberty.

There are two distinct tribes, *Mahtoories* and *Charruns*, also *Dharees* or mendicants; the latter observe circumcision.

It is supposed that the Brinjaris came into the Deccan as grain-carriers during the Mahomedan invasion. Their origin is not well known, they appear to have more resemblance to the Mahrattas than to any other nation, and in this District they have become the objects of suspicion to the Police.

The men differ very little in their costume from other castes, but the dress of the women is entirely different, coarse ornaments of ivory and pewter to their extremities and colored embroidered skirts and jackets; they are active, and endure great hardship and fatigue.

The *Mahtoories* were Brahmins who are said to have come from Muttra in Hindoostan as grain-carriers with Aurungzebe's force during the Deccan invasion. They wear the sacred thread, eat no animal food and drink no spirits. Should a male die after the investiture of the sacred thread, and the married woman die, cremation is observed. All others are buried.

The *Charruns* or Graziers have principally their origin, it is said, from the *Rhattore* of Joadpoor and came into the

Deccan with Asaph in January 1630 during his predatory incursion.

The *Dharees* were Hindoos of old; they are said to be the descendants of one Mholanur, but their proper origin is disputed; they worship the Deo Sarasatta Gajoo, and Gandha. They generally offer a he-goat as sacrifice. Many of the Dharries observe implicitly the Mahomedan persuasion and offer sacrifices to Peers and solicit Cazees and Fakeers to read prayers during the ceremonial rites of marriages, births and deaths. Among the Brinjaris, polygamy is permitted. Widowers and widows are permitted to re-marry.

The following is a history of the Gond's Province, being a translation of a chronicle compiled by the Sur Mookadum of Woon, named Neelkunt Lutchmun :—

"In ancient times the province was recognized by the name of "Zadeeprant" or the country covered with forests, and about 300 Fuslee was governed by the Manays. Afterwards the Gonds became powerful, conquered the Manays and ruled the country for 800 years; hence it was called Gondwanna or the Gond's forests, and by this name it is still known."

This country is very large and covered with dense forests. Its boundaries are on the North Chindwada, Bhundara and Oodsa Provinces; on the South, Budrachellum hills and Godavery river; on the East, Ootkul or Wadya Juggernauth's province; on the West, the boundary is irregular, it goes from Ootnoor by the hills of Makala and Mahore and thence by the villages of Sindkeid, Sayat Dongurkurda, Kalamb to Mooltap.

The inhabitants of the country were in a barbarous condition until the Bhoslays' conquest, under whom they improved and remained in the same state until the possession of the country by the British.

The history of the Gond Kings embraces from the commencement of the 4th Fuslee century to the 11th. About 300 Fuslee, the Gonds became powerful in the Zadaprant. They conquered the Manays and established the seat of their power at Shirpoor in Joorgaum Pergana. While there they built a fort on the hill of Manick since called Maorikgud which is still in existence.

One Balalsha assumed the throne and built a fort 8 miles to the east of the Wurda and Pynegunga rivers. He resided at a place called Bahalpoor and made it the seat of his Government.

There was another Balalsha surnamed Khand Kya from his body being covered with leprosy: to be relieved of this disease he used much medicine with ill effect. One day he went hunting in the jungles and becoming very thirsty, his servants, after a long search, found a small spring of water with which they filled a drinking vessel and presented it to the king. He, according to custom washed his face and drank it. Next morning, when he rose from his bed, he found that the eruptions on the face had disappeared. The queen was much astonished and enquired into the matter; she was informed of what had happened. The king and queen proceeded to the spot, and the former, after bathing in the pool, was cured of his complaint. The place where the water was found was called Achulnath, or the immoveable god. The king erected a temple over this pool and began to build a fort which was completed by his grandson. This town was previously inhabited by king Chundrasawmy and afterwards deserted, and was named Chundrapoor after the former king. It is situated between the Wurda and Surputta rivers; it has four gates, three windows and fifty-two bastions.

The Gonds are African featured, black woolly hair, prominent cheek bones, flat nose, thick lips and large ears; they are scantily attired. The females are fond of ornaments. Although very intemperate in their habits, they are hard-working, candid and simple-minded, and as a body not criminally disposed.

Pen, Kodial, Bhussan, Sanalk, Mingal, Durga, Passipen, Chundapen.

Some Gonds worship seven gods or deos; others, six, five, and four. Their principal god is Deo or Bhimpen or Bhemsen.

Gondi, Gazeti, Ratluk, Naikude, Madia, Muasi, Maria, Kuri, Batran, Parja, Koolam, Pardhan.

There are 12 classes of Gonds, they eat with each other but do not intermarry.

About monsoon time they perform a great ceremony before tillage and sowing; they have also rejoicing and ceremony after reaping. Their ceremonies consist of putting up stones under sheds or trees, besmeared with sindoor or red lead, and offer sacrifices of cereals, ghee, goor, fowls, sheep, goats &c.; but in deference to the Kunbees and Hindoos they do not slaughter cows or bulls, although their caste

and religion permit such sacrifice. Their rites are performed under moah, teak, roey, barhulda, saj, mango and ain trees. They also worship snakes like Hindoos. They sometimes burn, and at other times bury their dead, and at that spot they erect a Chabootra, have wooden posts in the four corners and a stone in the centre line, smeared with red lead.

The Koolams reside in about 12 villages along the banks of the Wurda. Their principal deity is Bhassen. They marry when young and have only one wife. They eat bulls, cows and buffaloes. Their dialect differs from the Gonds, they use many Telugu and Tamil words. A vocabulary of words was furnished in 1869.

The Purdans are an inferior class of Gonds and generally perform the menial works of the village; they worship several of the Gond idols. The higher Purdhans are priests, Bhats, Poojaries &c., to the Gonds, and the lower Purdhans act as musicians.

Booldanah District. By A. R. MENASSE, Esq., Civil Surgeon, Booldana.

Who are the "Karhada" Brahmins?

Karhada Brahmins are the "Konknust" brahmins, aborigines from Konkun, that part of the Bombay Presidency which lies to the south of Bombay, below the Ghats, containing the talooks of Rutnagherry, Bankote, Rajapore &c. They are brahmins of the same caste as other brahmins, being considered to be equally holy, and possessing equal rights of saying Vedas as the "Chitpavan," "Devarshee" and "Deshastha" brahmins, but they have no marriage relationship with each other. The appellation "Karhada" is derived from their having been reputed to offer human sacrifice to their deity—sacrifice of any brahmin and particularly of their son-in-law if they can. These rites (of sacrifice) are of course not performed openly but very secretly, and, therefore, a brahmin is generally afraid of going to dine at a "karhada" brahmin's table if invited. These sacrifices are offered with the view of propitiating the deity, and to obtain therefrom wealth or longevity to the family. No other motive leads these cruel votaries to sacrifice what is the best and noblest work of GOD'S creation, viz., a human being.

The manner of sacrificing is differently given by different

sources. The common one resorted to is the secretly poisoning the intended victim at a feast, and thus he is made to pay for it with his life.

What is Mân Pân? The words mean Mân, respect, and Pân, betul (a leaf.) Mân is an inherited right of Patel, Koolkurnee, Pândê, Deshpândê, Surdêshpandê, Deshmook &c., of the village. When a marriage ceremony is to take place, they are given places in their meeting and betul-nut in order of their rank, and are asked to begin the ceremony. Mân Pân practically means ceremonial respect. This term passes for certain prerogatives possessed or inherited by certain classes of the community; for instance, a Patel of a village has the Mân of receiving first of all "Pân Sooparree" on a wedding ceremony in his village. He has also the Mân of leading his bullocks first and to the fore of all others on the annual bullock festival. He has besides the Mân of being invited to any extraordinary occasion or meeting in his village. In the like manner a King, a Patel, a Nawab, a Deshmook may have his Mân Pân.

The word Pân is also the concomitant of the word Mân and is commonly used when expressing or asserting the prerogative. The meaning of it singly is merely leaf (pân) and is universally known.

Bassim District. By J. VITAL, Esq., Civil Surgeon, Bassim.

1.—*Name of the blood sacrifice.*

Excepting Brahmins, all other castes called Hindoos offer blood sacrifice. Human sacrifice is out of practice. The animals offered are buffalo, goat, ram, ewe, cock, hen, chicken. The sacrifice performed by Brahmins is called Yaduya or Yag, and that of the lower castes' offerings are called Bâli.

2.—*Deity, male or female, to whom sacrificed.*

The deity to whom the Brahmins sacrifice is nothing but fire. The deities of other castes are;—male deities viz., Kundoba, Byroba, Mussoba, Bheeroba; the female, Bhownee, Kalida, Dhorga, Murreematha.

3.—*Form of deity.*

Khundoba, and Bhyroba are forms resembling human shape with four hands. The form of Bhowanee, Khalida,

and Dhoorga, resemble the human female having four hands, the last (Dhoorga) having eight hands. Mussoba and Bheeroba are one mass of stone, besmeared with red lead; that of Murreematha is that of one mass of unshaped stone and is most feared by all the Hindoos and Dhairs. The form of Kali Devi, is said to be very beautiful,—a majestic inspiring female form with a crown on her head, with eight arms and hands, mounted on a lion, and is represented in the act of killing a demon, Mahishasur, who fought in the shape of a buffalo. When the head of that animal was cut off, he proceeded from out of its body, in his own form. The picture of the Devithus, represents the demon with its form, above the waist. Often, this is only met with the head of the Deviput, in temples, and again in others a shapeless stone besmeared with red lead. The form of Khundoba is a well-shaped and well-dressed man, with a crown on, seated on a horse, and often with two of his wives near him. Asras, goddess of woods, Sutwai, goddess of children and recently confined women, both these have female forms, and are invariably represented by stones, besmeared with sendoor; they are temporarily put up for the occasion; for instance, a confined woman with her infant goes out of her house, collects a few stones, besmears them with sendoor, worships them and returns home, after which the stones are left there, unnoticed, and unworshipped by others.

4.—*On what occasion is the sacrifice?*

The day for sacrificing is not fixed. The Yag, or day of sacrificing is not a fixed one but the process lasts for about ten days. The lower castes have set days for the purpose, and vary in different places, but most of them have their sacrifices on Dussara festival, and some on the day on which they have vowed. Some again on the occasion of marriages, childbirths, recovery from sickness, deliverance from some calamity and pacification of the gods in time of epidemics.

5.—*What living creatures are sacrificed.*

As already stated, goats, buffalo, ram, ewe, cock, hen, chicken. Human sacrifice has been practised in ancient times, but is now prohibited.

6.—*Detail the customs and processes of the sacrifice.*

The Brahmins sacrifice by expressing a few words, Mantras in Vedas. Some are annual sacrifices on particular days, others offer in liquidation of vows made to deities. The process of sacrificing is, that the party proceeds to the temple

of the deity with flowers, sandalwood and incense, and after performing their prayer or poojah, the animal offered is now laid on the floor before the deity, and then, by a Mahomedan Moola (priest) a knife is thrust into its throat. Some thrust the living creatures into a blazing fire, as offering. The animal is then killed, and laid before the deity for a time. Sometimes a few drops of blood are sprinkled on the deity and then the offered animal is cooked. Other things, as rice, wheat cakes, &c., are also prepared, and when everything is ready, a little of each is put before the deity. The assembled people then feast on the remainder; the lower class of people worship the animal to be sacrificed and kill it according to their "Mân Pân."

7.—*Who are the worshipping sacrificing people, and who are the sacrificing priests?*

"Yaduga" is performed by Brahmins, and this being very expensive, so much so, to the extent of 5,000 Rupees, it is only performed by wealthy people. "Agnhotries" are the sacrificing priests. Hindoos are the worshipping and sacrificing people. The Mahomedans offer their sacrifice to their "peers" and the tombs. The priests for the animal offerings amongst Hindoos are generally Hindoos; for the Mahomedans, Moolas. When animal sacrifice is concerned, Brahmins will never act as priests.

8.—*What are the names of the various gods of the people's race and tribes near you.*

The Hindoo gods are said to be 33 millions. The deities generally known are Ram, Kistna, Govind, Gopaul, Mahadeo, Vishnoo, Marolee, Kundoba, Bhyroba, Bhowanee, Musoba, &c. &c., Brahmins adore Ram, Vishnoo, Govind, Gopaul, Mahadeo, Marotee, Gunputee. The unlearned pay their homage to the numerous deities.

9.—*Are spirits worshipped, and if so, whose spirits?*

Ignorant people chiefly "Soodras" believe in spirits; they worship and offer sacrifices to the spirits of dead men. Some say, no spirits are worshipped, but offerings are made to some evil ones. "Sunyashis," tombs of holy men (Peers) are worshipped by all Mahomedans.

10.—*Are any of the elements worshipped, and if so, which of them, and by what race, or tribe, or people?*

Five elements (sun or fire, earth, water, air, and sky) are worshipped by all classes of Hindoos and Koonbees; the sun is worshipped the most as he is considered the visible

representative of God. The Parsee race particularly adore and pay their homage to the sun or fire.

11.—*Are trees worshipped, and if so, which of them, and by what race, or tribe, or people ?*

Eight trees are the principal ones worshipped by all classes and tribes of Hindoos and Dhairs, 1, Toolas or Thoolsee; 2, Bel; 3, Peepul; 4, Bud; 5, Awali; 6, Oomber; 7, Shami; 8, Apta. The first two of these were unanimously considered in former times as the holiest of the whole, and are still sworn on either; the two last (Shami and Apta) are worshiped on Dussera day. Some say the first four are daily worshipped, the other four, on some particular days.

12.—*Are serpents worshipped, and if so, which of them, and by what race, or tribe, or people ?*

Cobra-de-capello, or Naag, worshipped by all classes of Hindoos, and even, by some of the low caste people. The 5th day of "Shravun" their 5th month is the day of worshipping, and is called "Naag-Punchme." On the day of festival, the people pay their homage, and the Naags are held in the highest estimation, and fed with milk.

13.—*Have any new deities or religion been recently introduced in the locality, and if so, describe ?*

No new deities or new religion have been introduced in the district.

14.—*What is the name of the chief deity in the district, its form, by whom worshipped, and is it a pilgrim shrine ?*

In the town of Bassim, there is one principal deity called Ballajee formed of one mass of stone, besmeared with sendoor, resembling a human shaped man. All Brahmins, Hindoos and the lower class of people worship it, but it is not a pilgrim shrine; only a fair is held once a year, for three days. At a village about twelve miles from this station called "Naggurdoss" there is a pilgrim shrine. To this place people from different parts, both pilgrims and traders, resort biennially. The festival takes place in commemoration of three goddesses; 1 Yeasari; 2, Toojapori's mother; 3, Mullapore's mother. The fair lasts for 22 days, the attendance from first to last is said to amount to 141,084. The value of property such as copper, brass, cloths and other articles of various kinds brought and sold there amounts to Rs. 271,910. Also at Mungloorpeer, a town in the district about 24 miles from this, is seen a Mahomedan tomb or "peer" to which place all sorts of people attend and have a fair during the month of October yearly. It is a pilgrim shrine.

Blood sacrifices of human beings occurred till recently, amongst the Konds, and of buffaloes, bullocks, goats, pigs, kids and lambs, amongst the races of the peninsula of India.

Akola. By ALEXANDER PORTER, M. D., Civil Surgeon, Akola.

1. Name of the blood sacrifice.	Goats, buffaloes and lambs.
2. Deity, male or female, to whom sacrificed.	In some parts male deity, and in most parts female deity.
3. Form of deity.	In the shape of a human being.
4. On what occasion is the sacrifice ?	On the occasions of cholera and small-pox.
5. What living creatures are sacrificed ?	Fowls, kids, buffaloes and goats.
6. Detail the customs, and processes of the sacrifices.	When a vow is made by a person that a certain sacrifice should be made to a certain deity, he is first bathed and adorned with a yellow colored cloth, having a flower garland on his neck, and after performing the usual ceremonies, incense burning, &c., the sacrifice is offered.
7. Who are the worshipping and sacrificing people and who are the sacrificing priests ?	Generally the low caste people and the priests are also of the same race.
8. What are the names of the various gods of the people, races, and tribes, near you ?	Khundoba and Davee.
9. Are spirits worshipped, and if so, whose spirits ?	No spirits are worshipped.
10. Are any of the elements worshipped and if so, which of them and by what race, tribe, or people ?	Elements are worshipped by many classes of people especially the water.

11. Are trees worshipped?	Trees are worshipped by Brahmins principally.
12. Are serpents worshipped?	Serpents are worshipped by Brahmins principally and many other sects also.
13. Have any new deities or new religion been recently introduced into the locality? If so, describe.	No.
14. What is the name of the chief deity in the district, its form, by whom worshipped, and is it a pilgrim shrine?	Siva is worshipped by all classes of people, and it is not a pilgrim shrine.

ART. XXIII.—*Medical Report upon the Town and surrounding Villages of Ganjam,* by R. HUFFTON, ESQ., Honorary Assistant Surgeon.

(Communicated by Inspector General, I. M. D.)

The town of Ganjam is situated in latitude 18° 23′ north and east longtitude 85° 6′. It is seated near the right or east bank of the Ruskhoolea or Ganjam river on a rising portion of a low flat plain which extends for miles from east to west, and is bounded on the north by a number of high hills, a few miles distant. The plain consists principally of paddy land, except on its eastern face near the sea where it is sandy, and the whole of it is cultivated almost to the doors of the houses when there is sufficient water for the purpose. Its gross annual revenue is about Rupees 15,000.

The average elevation of the town is from 5 to 8, 9 and 10 feet above mean sea-level, and nowhere does it appear so high as the trunk road which passes through it. During the prevalence of the south-west and north-east monsoons the lowest portions of the town are inundated; and, as there are no drains to carry off surplus water, it is only removed by evaporation when the rains are over.

RIVER.—The river follows an easterly direction towards the coast north of the plain, and crosses the trunk road leading to Ganjam about a mile west of the town, where it is nearly half a mile broad, and falls into the sea

on its southern side. It is fordable at all times except during the freshets, when crossing must be done in boats. During high tide adults and empty carts can cross. At all other times the bed of the river for a few miles is partially covered with sea-water for some portion of the twenty-four hours daily. In its course the river nearly encircles one-half of the place, and emanations of a noxious character from its surface bed must add to the insalubrity of the town.

Numerous tanks and pools filled with decaying herbage and other decomposing matter dot the plain, principally in and around the town, from which noxious gases are constantly passing into the air, and the water from these places is used by the people for almost every purpose.

Jungle.—There is now a good deal of exuberant vegetation in several parts, especially about the dwellings of the inhabitants, and the remains of former gardens and compounds, the growth of the last two years, which in some measure prevents free ventilation, but the danger to health from this source is now much less than it was. Some few years ago a severe outbreak of fever raged in the station, and subsequently the Department of Public Works were engaged for some months in cutting down the jungle and otherwise cleaning the town.

Soil—The soil in and around Ganjam is alluvial, except near the sea where it is sandy. It is a dark tenacious loam containing apparently iron. This stratum of tenacious loamy soil, I am informed, is generally from 12 to 15 feet in thickness, except near the sea and banks of the river where it is less, and immediately underlying it soil of a more porous character is met with, in which probably moisture from above would readily percolate if the land was placed under a system of sub-soil drainage. At my suggestion several pits were dug in the fields in various parts on the outskirts of the town, each pit from 6 to 8 feet in depth, and on my last visit to Ganjam I examined the earth taken from the bottom of these pits, but found it to be the same in character as that on the surface.

Water Supply—Ganjam and surrounding villages are divided into four parts, and in describing the sources of water supply each will have to be taken in detail.

The town of Ganjam and adjacent villages, Borapilly and Pointhela, form one division; they occupy a central position near the trunk road, and the water supply to this part is furnished by tanks, wells, and pools. The water obtained from these sources for drinking, cooking, &c., cannot be worse. For the most part it is supplied from the filthy tanks before mentioned into which the drainage of the town is chiefly received with all the sewage it may carry with it, or the water is got from wells into which fluid of this nature percolates. In the account given by the Curnam there are in all twenty-nine wells, exclusive of numerous tanks, pools and hollows, which are generally filled to overflowing during the rainy season; many of these pools and hollows dry up in the hot weather, while others, the far greater portion, contain a filthy, slimy greenish fluid which is used for cooking and ablution purposes; a few of the better kind are used for drinking after straining the water. I looked at the water from a number of these tanks and, with the exception of three or four, they were all so bad that it is surprising the people used them for any purpose whatever. Of the twenty-nine stone wells eight are used for drinking. Of these three only, situated on the outskirts of the town, are described as really good. Some few of the more wealthy inhabitants, who will pay for the conveyance of it, procure their water from these latter wells. The water of all the other wells is so very brackish, or salty, that they are only used for bathing, and occasionally for cooking. These wells are mostly situated in the centre of those streets where the rice and paddy dealers reside, at about 200 yards from each other. These streets during the day are nearly covered by wet rice boiled in the husk, placed there for drying alongside of cattle ordure, in all stages of moisture, laid out in the sun for the same purpose. This practice probably has existed for many years. It is, therefore, not surprising that the water from these wells is so bad when it is considered that organic matter is constantly passing into them through the earth by percolation derived from the wet substances placed upon it daily. The inhabitants of this part of the town are very subject to fever. The residents in the adjoining villages of Borapilly and Pointhela suffer from this complaint in a less degree, and, in my humble opinion, the cause is to be looked for in the quality of the water they use, which is far more pure than that in the town.

The 2nd Division comprises Pedda Kunchipoorum, Chinna

Kunchipoorum, and Dolzepettah. These places are situated in the north-west of the plain near the bank of the river and so low as to be only 1 foot and 6 inches above mean sea-level. The residents generally are agriculturists, fishermen, and lime-burners. There is no conservancy, and the streets are in that condition seen in Indian villages not under municipal control. Drainage there is none except into the river when the place is sufficiently flooded for that purpose. There are no tanks except a few hollows which quickly dry up in hot weather. There are a few wells; the water of some I tasted, and found it good. The people generally use water from the river for drinking purposes. At the time of my visit I saw only two cases of fever. The number of sick is the smallest in Tabular Statement No. 1.

The 3rd Division is Dumdarapoorum. This is a village of ordinary size, situated to the south-west of the town of Ganjam on the river bank. The inhabitants are principally boatmen and fishermen. The conservancy is no better than those previously mentioned, but here, as in the town of Ganjam, the street in several places was covered with wet paddy and cowdung drying in the sun. The people drink river water for four months in the year during the freshets, at other times from wells in the vicinity, owing to the water of the river being salty. They are not so healthy as the people in Kunchipoorum. A few cases of enlarged spleen were observed in this village, and the number of sick is much greater than in the former place.

Several scattered hamlets, some of them rather far apart, constitute the 4th Division called Pullibunda. They are situated on the north-east of Ganjam. The number of sick is almost double that of the last-mentioned village—see Table of sick. The conservancy of these places is like all the others. The residents are generally boatmen, coolies, and dealers in salt. Their water is procured chiefly from wells. I found the water from several of them brackish, probably from proximity to the salt-pans. Not a single case of fever showed itself when I passed through. I only went through three of them. The wells were generally situated on elevated spots where sewage could not get to them. There were a few hollows which contained pretty clear water.

Drainage.—There is none except from the higher to the lower parts of the town caused by the natural configuration

of the ground where it lodges in numerous hollows in different parts and remains there until it dries up by evaporation. The old masonry tunnels of former times exist, but no drains or channels to carry off water.

During a portion of the year 1868-69 the Department of Public Works were engaged in removing the jungle and overgrown herbage in and around Ganjam, and a system of efficient drainage appears to have been commenced in the cutting of channels for letting off superfluous water on the north of the town, filling up filthy stagnant tanks and pools, repairing tunnels, &c., but the work was suddenly put a stop to by the Supreme Government at the period when all other public works in course of erection were suspended. Since that time the work has not been recommenced, although only a moiety of the sum set apart for it was used.

It appears to me that the severity and prevalence of the fever in Ganjam, during the period I have been in medical charge of Chetterpore, has not been so great as it was prior to the removal of the jungle, &c., by the Department of Public Works before mentioned, and I attribute this change for the better (however small) to the measures then instituted, but only very partially carried out.

CONSERVANCY.—There is no conservancy of any kind in operation. The refuse and sweepings of houses and stalls lie about in every direction near the dwellings of the people, and excepting the trunk road and a few others the streets in many places are covered by the people with cattle ordure in every stage of moisture, from the hard brattie to the semi-fluid cowdung which when sufficiently dry is used for fuel. The smell from this cause, coupled with that from rice boiled in the husk, spread on mats in close proximity with the other, contaminate the air so much as to sicken persons exposed to its influence who are unaccustomed to it.

There are no latrines, nor scavenger establishment in the place, the people make use of holes in their yards, or the nearest hedge or cover that may be convenient for the purpose.

HISTORY.—Previous to the year 1815, Ganjam was the head quarters of the district and the principal residence of a pretty large military force, European and Native, in the Northern Circars. The chief civil authorities of the district with their establishments resided there, and it appears to have been for almost a century previous the most flourishing, populous, maritime town in the Presidency of Madras,

north of Masulipatam. The remains of magnificent buildings and the old ruined fort fully attest its former prosperity, although now it is a place of little note, and consists of the old native town of Ganjam greatly reduced in size, and the other divisions before mentioned.

In 1815, and two succeeding years, a very severe epidemic fever raged in the place, and villages for some miles around, so deadly in its character that many of its victims are said to have been carried off in from twenty-four to forty-eight hours. From the account given of this fever by some now living, it appears to have been an every-day fever, attended with very severe rigor of long duration, succeeded by heat, and after a few days by swellings of the whole body which terminated in death. Others again state that it was a fever of a bilious character marked by congestion of the viscera of the head, chest or belly. This disease is said to have originated from a flooding of the low country, the result of a storm, but none of the natives seem to have remembered it.

It was during the virulence of the epidemic that a general exodus of the Government establishments appears to have taken place, the Military were sent to Berhampore and the Civil to Munsoorcottah (now Gopaulpore) and Chicacole. Since that time, although the place has become much more healthy, it has never regained its former salubrity, and the residents ever since have been exposed to the attacks of an endemic fever, paludal in its character and type, and varying in intensity according to the amount of moisture in the atmosphere, high winds, and insanitary condition of the place.

The native idea is that the fever is dependent upon the bad quality of the water they are obliged to use, and they think that nothing will ameliorate the unhealthy condition of Ganjam until the whole of the inhabitants are furnished with good river water. So imbued are they with this notion that they begged of me to bring this subject prominently to the notice of the authorities, and gave me an urzee for that purpose.

The natives treat the fever by giving decoctions of various roots which act on the bowels, and drinks containing ginger, long pepper, and other spices. The generality of the people have faith in the use of quinine, and readily take it when prescribed for them.

Tabular Statement No. 1, shows that there are more sick

in the divisions of Damdarapoorum and Pullibunda, in proportion to their population, than in the other two. This I believe may be accounted for in the fact that the inhabitants of these places are generally of the poorest class of labourers, being chiefly boatmen, fishermen, coolies, and salt-makers, who, from the very nature of their occupation, are exposed to those conditions of temperature and other causes which favour the production of disease, in addition to the circumstance that their dwellings are situated either on the bank of the river, a little above its junction with the sea, or along the edge of extensive salt-pans.

The endemic fever of Ganjam, in my humble opinion, is in character that of all paludal fevers in most parts of the world where the nature of the soil, heat, and moisture combined are sufficient to bring about that condition which is the cause of them. In the present case I believe the increase of it in Ganjam is chiefly due to the cessation of the south-west and complete failure of the north-east monsoon, the action of the sun causing rapid evaporation of moisture from the earth's surface, and thus setting free those malarious germs which are the efficient cause of the disease.

I would here also bring to notice that many of the cases in the tabular statement are those of persons who have had fever repeatedly before, and whose constitutions have in a manner become saturated with malaria; and although cured for the time, yet the slightest change in the direction and force of the winds, or in the condition of the atmosphere, is sufficient to produce in them a recurrence of the complaint.

The rainfall during the months of August, September, and October this year has been very much less than for the corresponding period in the previous year, as shown in Table No. 2, and this circumstance, in all probability, has influenced in some degree the increase of fever, owing to the water used by the people holding in a more concentrated form those deleterious substances which when taken into the body predispose to disease.

The salt-pans situated on the north-east of the plain near Ganjam appear to be a fruitful source for the development of the disease. More cases of the Police stationed there are brought to Chetterporé for treatment than from any other station in the district.

The type of fever chiefly prevailing is the tertian, although there are many cases of quotidian and quartan fever. In those complicated with enlarged spleen I found

that they had suffered from the tertian type chiefly, and were otherwise weakly and anemic.

According to the statements given by a few of the natives of the place, it appears that sometimes, as in other places, a few of the cases of the intermittent type after a time take on the remittent form, attended occasionally with head symptoms, from which the person seldom recovers.

For the past two years supplies of quinine have been furnished to the Collector from Madras for the use of the inhabitants of the district on payment, but nothing specially for the sick in the town &c., of Ganjam. It is in contemplation to institute sanitary measures for the improvement of the health of the people of the district, and the sum of Rupees 1,000 has been passed in the Budget for that purpose during the coming year. I am informed that the Local Board have discretionary power to devote that sum or any part of it to the improvement of such localities as in their judgment may require it most.

The fever generally is quite amenable to proper treatment. A purge and subsequently a few large doses of quinine or quinine, arsenic and bark, given early, almost always suffice to dissipate it for the time; but it is very apt to recur when the person is exposed to a continuance of the causes which produce it. In such cases spleen complications frequently take place, and occasionally Beriberi supervenes, or it passes into the remittent form, when it becomes dangerous. The continued use of quinine combined with iron is very effective in preventing relapses.

TABULAR STATEMENT No. 1. showing the amount of population, number of cases of fever, and proportion of sick

to population in the several divisions comprised under the town of Ganjam, &c.

Name of locality.	Amount of popuation in each division.	No. of sick in each division.	Proportion of sick to strength of population in each division.
Town of Ganjam.	4,281	221	1 in $19\frac{1}{3}$
Kunchipoorum ...	809	7	1 in $115\frac{1}{2}$
Dumdarapoorum..	796	53	1 in 15
Pullibunda.....	1,054	87	1 in $12\frac{1}{10}$
Total...	6,940	368	1 in $18\frac{1}{3}$

TABLE No. 2. showing the rainfall in Ganjam during the undermentioned months for the years 1870-71.

Months.	1870.		1871.		Remarks.
	Inches.	Cents.	Inches.	Cents.	
August ...	5	2	3	5	No rain has fallen in the month of November
September.	12	55	6	...	
October ...	10	9	...	75	
Total...	27	66	9	80	

ART. XXIV.—*Return of Admission and Deaths from Dengue at Trichinopoly at October 14th 1872.*

(Communicated by Inspector General I. M. D.)

Regiments.	Duration of prevalence	Combatants.									Recruit and Pension Boys.			Europeans.									Camp Followers.									Civil Population.									Total.		
		Native officers.			Rank and File.									Officers.			Ladies.			Children.			Men.			Women.			Children.			Men.			Women.			Children.					
		Strength.	Admitted.	Died.	S.	A.	D.	S.	A.	D.	S.	A.	D.	S.	A.	D.	S.	A.	D.	S.	A.	D.	S.	A.	D.	S.	A.	D.	S.	A.	D.	S.	A.	D.	S.	A.	D.	S.	A.	D.	Strength.	Admitted.	Died.
26th Regt. N.I.	12th Aug. to 14th Oct,	16	16	...	656	622	*a* 1	72	56	...	8	...	..	5	1	...	5	...	...	116	44	...	854	284	..	714	156	*b* 2	...	...	...	...	..	...	...	...	...	...	...	2,416	1,179	3
38th do. do.	16th Aug. to 12th Oct.	16	15	...	652	526	1	47	36	...	8	4	..	2	1	...	2	...	...	149	34	1	809	187	2	820	214	8	...	...	...	...	...	...	...	...	...	...	2,505	1,017	12
39th do. do.	16th Aug to 11th Oct	13	8	...	499	396	..	53	23	...	6	6	...	2	2	...	6	5	...	42	14	...	352	7	...	342	12	..	...	...	...	...	...	...	...	...	...	...	1,315	473	...
Fort Hospital	19th Aug. to 17th Sept.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	..	..	...	...	..	...	...	..	...	...	...	...	814	*c* 1	...	749	...	...	40	...	...	...	1,603	1
Genl. Hospital	Aug. to 12th Oct. 1872.	...	...	...	..	...	...	...	...	...	...	...	..	..	.	...	..	...	...	...	..	...	...	...	...	..	...	...	...	150	*d* 1	...	...	...	...	...	...	...	...	150	1
Total...		45	39	...	1,807	1,544	2	172	115	...	22	10	...	9	4	...	13	5	...	307	92	1	20,15	478	2	1,876	382	10	...	964	2	...	749	...	...	40	..	6,260	4,422	17

a. Dysentery following Dengue.
b. Convulsions.
One Lady and two Children were re-admitted.

c. Dysentery supervened.
d. Paid Medical Pupil Chinnasawmy.

Native Regiments including Camp Followers.

Summary.

Date of first case.	Date of last case	Strength.	Admissions,	Deaths.
12th August 1872.	14th October 1872.	6.266.	2,669	15

Fort and General Hospitals,

Admissions.	Deaths.
1,753	2

OURSELVES.

With scanty encouragement (and some positive and unanticipated discouragement) we have arrived near the completion of our sixth Volume, marking three years from the beginning of our undertaking. It rests now with the Medical Profession in this Presidency to decide whether the Journal shall continue to be issued or shall cease with its December number. We cannot go on devoting time and labor— valuable, at least to ourselves— to a task which either the apathy of our Medical brethren or our own incapacity prevents from being so useful as we expected when we began. Our regular contributors (to whom we take this opportunity of returning our warmest thanks) may be counted on the fingers; our contributors, regular and casual together, would not need more than the digits of the upper and lower extremities for enumeration. We were careful not to expect pecuniary advantages from our work, by which sage precaution we have evaded disappointment, but we confess we should like to number as subscribers more than 38 per cent. of Local Medical Officers, 17 per cent. of the British Service, 11 per cent. of the Apothecary grade and 2 per cent. of the Hospital Assistants. These figures represent the encouragement we receive from the different ranks of our profession.

We are quite willing to admit, as we have intimated above, that possibly our failure to meet with the degree of appreciation which we expected is due to our own deficiencies—that our success may have been equal, perhaps even superior, to our desert. This alternative hypothesis, however, if accepted can in no wise alter the practical conclusion.

Whether our comparative ill-success in meeting with support from our brethren is due to their apathy or our incapacity we are equally unable to continue our experiment without a larger measure of encouragement than we now receive. If the fault be our own, we have at least done our best—"angels can no more."

CLERICAL DOCTORS.

We have here lying before us a copy of the "Jamaica Church Chronicle" of the 17th June; in which we read with great interest an article entitled "plea for a Medical Priesthood". The writer earnestly pleads for a combination of the two professions "Divinity and Medicine" as often as it is practicable, and regrets that it was not recommended and expressly sanctioned by the Church in her Canons.

That such a combination would be, as it has been in isolated cases, of great benefit to the Colonial Churches, nobody ever would or could doubt; but the question is how far it would be advisable to carry out what the writer of this article principally advocates, viz.—that a Medical man after he has taken holy orders should support himself entirely by his Medical profession and not be in any way a burden to the Church.

What does Scripture say to this.—Christ went about healing the sick in body and soul. But then Christ took no fees whatsoever. St. Paul during his ministry supported himself by his trade of tent-making; but this means of support is not one which would bring him in such close and frequent contact with his Christians of the various Churches, as the Medical profession would a clergyman who was in charge of a parish.

What does the Church of England say on this matter? It prohibits a Clergyman from entering into any business or trade or other profession: and why? Because experience has taught, firstly, that the world lessens its esteem towards those who call themselves ministers of religion and yet at the same time are trying to increase their incomes and to enrich themselves; secondly, that the clergy are at the best but weak and just as much exposed to the temptation of love of money and riches as others and might by giving way to such temptation greatly mar their usefulness and influence for good. Church History will bear us out in our statement. Let us assume a case. Suppose a medical man has established himself in a village where there are the rich and the poor living, and has succeeded in getting up a large practice which yields him enough to live comfortably and above care. Suppose also that such a medical man possesses all the necessary qualifications and knowledge, and is ordained as incumbent of that village where he has been practising, without any remuneration for his clerical duties. As Doctor the greatest portion of his time would be taken up in visiting the sick, how would the well and hearty fare, what time would be left him to care for their spiritual concerns such as regular and systematic house visiting? What time could a medical man reckon upon as his own, to carry out the regular ministrations of the sanctuary? And again, suppose squire S. who pays a good fee, and poor blacksmith T. who cannot afford any, are both taken ill at the same time, would not the clerical medicus be placed in an awkward position, before the public and with his rich patient, in deciding whom to attend first and how many visits to pay to each patient? For the welfare of a parish the medical profession combined with the clerical one would prove a great blessing, if the former is honorary and

the latter the source from which the income is derived, but not otherwise.

As regards medical men who derive a certain income and are placed in charge of hospitals, the case is altogether a different one. Thus situated a Doctor who is also in Holy Orders would prove a great blessing, as he then not only could attend to the bodily but also to the spiritual wants of the inmates. Knowing them by frequent visits he would get better acquainted with their spiritual state and would be always more at hand for any sudden emergency than a Chaplain who only now and then can visit the hospital, and who cannot be so regular as the Doctor in attendance by the bedside of the patients.

The Madras General Hospital is one of those places where we think the plan suggested by the Jamaica Doctor and Divine could be carried out with great benefit. At present there are three medical men attached to the hospital, two of whom visit the place regularly twice a day, while the third resides there and is at hand day and night to attend to the wants of the patients. But how does that hospital with its hundreds of patients fare as regards spiritual matters? a chaplain is told off to attend to the duties there in addition to a large district of which he is placed in charge. It is next to an impossibility for him to pay more than one or two flying visits weekly to the hospital, and in case of any emergency he is not, he cannot be, at hand to soothe the last moments of the dying with spiritual comfort. Cases have happened where poor sufferers have begged to have a clergyman to whom they could confide the wants of their souls and from whom they could hear words of encouragement and counsel, ere they passed away to the land unknown, but such a clergyman could not be found. He was on leave—or he was out visiting his District, or when he did come as soon

as he had received the message, the poor sufferer had passed away, and was beyond the power of human comfort and consolation. But such cases would *not* happen if a resident medical man had been admitted to Holy Orders. He would be there day and night not only to relieve the bodily ailments but also to attend to the spiritual wants of his patients. Is such a plan impracticable in the General Hospital?

We have here given but a very cursory view of the subject, which is a very interesting one. Our time and space do not allow us to enlarge on it at present, but we shall be glad to publish suggestions on the matter and thus to have it thoroughly discussed.

CHLOROFORM AND MORPHIA COMBINED.

In the early part of this year, M. Claude Bernard brought forward at a meeting of the Institute a paper on this subject, written by a pupil of his, M. Guibert. In experiments which the latter had conducted it was found that when a patient under the influence of morphia was subjected to the action of chloroform in the ordinary way two distinct conditions were procurable, *analgesia* and *anæsthesia*. When chloroform was administered after the hypodermic injection of one to two centigrams of hydrochlorate of morphia, a state of analgesia was first produced, in which consciousness and power of voluntary movement were preserved; and which is suited to the performance of minor surgical operations and to labor cases, inasmuch as sensibility to pain is notably lessened. A more prolonged and uninterrupted inhalation gives sleep with anæsthesia and muscular relaxation, a condition suitable to the performance of

capital operations and termed by Bernard *mixed anæsthesia*.

The state of analgesia had not been previously described or tested therapeutically. The author made about thirty observations, half the cases being obstetric, and came to the conclusion that the condition was likely to prove of great value in laborious labors, in operations unattended by lesions of the nervous trunks and in the treatment of certain very painful affections, as lead colic or hepatic or nephritic colic. The dose of morphia varied from one to two centigrams; that of chloroform is not so easily specified, owing to loss by evaporation. The latter, however, must be relatively small as it was found that the analgetic state could be maintained for several hours, in severe cases of lead colic, by simply inhaling the chloroform at intervals from an unstoppered phial. It was to cases of laborious labor that analgesia seemed likely to become most applicable in practice. It diminishes the suffering very decidedly and it may be kept up for several hours without injury to mother or child, without interfering with regular uterine action or predisposing to post-partum hæmorrhage. The following is the procedure followed. About a centigram of hydrochlorate of morphia is injected beneath the skin of the forearm, when the pains are becoming difficult to bear and signs of agitation, anxiety and despondency are appearing. A quarter of an hour after the injection chloroform inhalation is commenced in the ordinary way, at the beginning of a pain. After ten inspirations of air mingled with chloroform vapor the patient feels the suffering attendant on the uterine contraction diminishing, while the uterine action remains unimpaired. The inhalation is then discontinued and resumed at the onset of each pain to the termination of the labor. When the head is pressing on the perineum and the analgesia becomes less pronounced

there need be no hesitation about injecting half a centigram of morphia. After this treatment there is much less of the fatigue which usually follows difficult labor.

In one case the author performed version more than sixteen hours after the escape of the waters, with the greatest ease, the state of analgesia having been induced; the mother remaining capable of answering questions but not uttering cry or complaint. The combined action of the morphia and the chloroform had completely obviated that retraction of the uterus which renders the operation so difficult to the accoucheur and so painful to the patient. The condition can easily be maintained without passing into anæsthesia if the inhalations are sufficiently often interrupted.

IRISH MEDICAL BENEVOLENT FUND.

We have received the Thirtieth Annual Report of this most deserving Society and we are glad to find not only that its means of doing good, though far from being equal to its deserts, are increasing year by year, but also that contributions from the Indian Branches are growing annually more considerable. During the year 1871-72 £841-10-6 was expended in grants to medical men incapacitated for work by age or illness or to help the widows and orphans of brethren who died and left their families destitute or imperfectly provided for. Nine medical men were amongst the applicants for grants, sixty widows and sixteen orphans.

The Bombay Branch, the first organized in India, remitted over £79 during the past year. The newly formed Bengal Branch sent more than £41. Madras contributed Rs. 420, but less than might have been expected of her. Out of 50 members of the local

service from whom help might reasonably have been hoped for, we can count but 16 names in the Report and the sister service is still more inefficiently represented. We hope that the thirty-first Report will show signs of more active sympathy among Irish medical officers in Madras with a Society which has so high a claim to their support.

Dr. P. G. Fitzgerald, Madras, will be glad to receive contributions from Indian officers and E. A. Gibbon, Esq. R. A., Ramandroog, continues to act as Joint Secretary in this Presidency for the British Medical Service.

REVIEW.

Report of the Sanitary Commissioner for Madras for 1871.

This work of the Sanitary Commissioner represents a vast amount of well bestowed labour. The subjects treated of are numerous and varied. The volume is a large one, but it would be difficult to suggest curtailment without loss. It has been affirmed more than once that the office of Sanitary Commissioner is quite unnecessary, a needless expense, that he only does work which is or ought to be done by the Deputy Inspector Generals. This we very much doubt. These officers lead a very busy life, and have no time to do most of the work of the Sanitary Commissioner.

The first subject noticed is the sickness and mortality among British troops. The mean annual strength was 10,802, the total number of cases of sickness 12,781, the average daily sick 617·09, and the number of deaths 225. These figures give 1183·2 per 1,000 admissions, 57·12 per 1,000 daily sick, and 20·82 per 1,000 deaths. They are much about the average of the last ten years. Cholera was generally absent during the year from all stations except Secunderabad, where a sudden outbreak attacked 71 out of 360 of Her Majesty's 18th Hussars in three days, carrying off 33 of them. "Typhoid fever was imported from Ireland" into Cannanore and Calicut. With reference to this disease our author is of opinion that "it is not an indigenous disease of "India. If the natives suffer from it at all we can find no "conclusive evidence of the fact. But young persons of "European extraction are prone to suffer, more in some years "and in some stations than in others, and of late years just "as the importation of troops and passengers from England "has increased so has typhoid fever been commonly ob-"served." In answer to those who think that a high temperature is favourable to congestion of Peyer's patches, he informs us that typhoid is most prevalent in the cool climates of Bangalore, Secunderabad and Wellington, and that too in the cold seasons of the year, and therefore he does not admit that the heat has anything at all to do with the production of Typhoid. It is unfortunately very difficult to

prove the existence of such a disease as this among natives, *post mortem* examinations being so rarely allowed.

The question of age in relation to the British soldiers' mortality in India is entered into very minutely and the conclusion come to is that the Home Government has no statistical authority for deciding against sending soldiers under 20 years of age to India. They have done so on the ground that such soldiers are more liable to disease and early death than those who arrive in India at a more mature age. No statistics showing this, as regards disease, have yet been made out, and the tables of mortality prove that " as regards " diseases fatal to life the young soldiers have a pre-eminent " advantage over those of maturer years." For example while the number of deaths per 1000 under 20 years of age is 7·4, that between 20 and 25 is 13·7: between 25 and 30—21·6, and so on. There is nothing here but the usual law of increase of mortality according to age. But beside this Mr. Cornish tries to make out that men below 20 do not suffer ultimately in a greater ratio than those coming to India between 20 and 25. This he does indirectly by means of Actuaries' reports on the India Funds. Military Officers come to India under 20 as a rule, while medical men average 24 years on arrival. The reports show that a larger proportion of the latter die between the ages of 25 and 35 than of the former ; and Mr. Cornish affirms that " as re- " gards climate &c. the fact that both Medical and Military " Officers served in the same Presidency, will be sufficient " to show that both classes existed under exactly similar " conditions of life." Our opinion is that the MedicalOfficer in this country runs much greater risks as regards his life than the military officer. The latter rarely dies on the field in these days. The former has constantly to face death in many shapes, in the camp, the hospital and by the bed-side. There is one respect in which we think the soldier is damaged by coming to this country under 20 and that is in his physical development. His life here is a very idle one, on the whole indeed a luxurious one. With the exception of a little parade in the morning and occasionally in the evening he does nothing. During the greater part of the day he lies stretched on his cot, and the consequence must necessarily be that his development comes quickly to a stand. Instead of filling out in bone and muscle to the age of 25 or thereabouts he sticks at 20 in these respects. His usefulness as a soldier must be always less than that of a fully matured man. No

Indian statistics could well show this as the soldier's period of service in the country is so short. If we could follow him home, however, we ought to find him old before his time. We think this is a common result in the case of officers and others who have come young to India. It has been shown that the lives of the married Madras Medical Officers have been very much better than those of the unmarried. Our author ascribes this to "habits of life." May it not rather be due to the fact that the unmarried officers get more knocking about and more dangerous work just because they are unmarried and have no incumbrances? To settle the question of more or less sickness among young soldiers in India, Mr. Cornish has suggested a new form to the Government of India for medical officers to fill up. It would answer the purpose most effectually, but it has not been sanctioned on account of the large number of returns already required of these men.

The number of children with the troops amounted to 2,982. As usual the mortality among them was great and, as usual the deaths were most numerous among children under two years of age, from convulsions, teething, diarrhœa and bronchitis. These "tell a tale of bad or injudicious feeding, or of exposure, and of defective clothing."

The subjects of venereal disease and the effects of the Contagious Diseases Act are treated very fully. The number of admissions from these diseases is still very large, being 171 for every 1000 strength. This is less than the average of the last five years which was 196 per 1000 and of the fifteen before that—namely 263 per 1000. It is generally stated that the individual cases are much less severe than they used to be, the proportion of indurated sores being much less than formerly. Dr. Cornish thinks however that soft chancres in this country are often followed by constitutional symptoms. On the whole he is satisfied that the Contagious Diseases Regulations have done some good; and one reason why they have not done a great deal more is that there are large classes of native women who practise prostitution whom the Act cannot or at least has not reached. Such are the pagoda and dancing girls, grass-cutters, female coolies employed about barracks and many others. Another reason is that the ordinary Police of the country have every where proved inefficient as detectives in this department. "The law is very laxly administered, and we have no right to look for very marked results while the regulations are allowed to be sys-

tematically evaded." It was thought that prostitutes would rather like periodical examinations with a view to preservation of health. On the contrary they hate them and avoid them as much as possible, often changing their names, castes and residences on this account. In Madras most of the prostitutes live beyond municipal limits, and only come into town at night to ply their trade. In Secunderabad we are told that women pull the soldiers' punkahs at night. This might be used as a strong argument in favour of the introduction of steam as in the General Hospital at Madras.

Under the heading "Stational Statistics" European Troops—we find that while the population of Madras was estimated at 720,000 in 1839, and 450,000, in 1863, it is now proved to be not quite 400,000, and most probably it never exceeded this figure. The mortality in 1871 was registered at 13,034, and assuming this to be exact we have a mortality rate of nearly 33 per 1000, so that Madras is not the healthy town it was formerly believed to be. The General Review of Madras is so interesting that we give it in full.

"Madras although so large a town, is unproductive in a "politico-economical sense.

"It has no prosperous manufactures or industries that "would naturally attract a population, or cause it to in-"crease rapidly. Rather more than one hundred years ago, "it was a mere fishing village, but it grew very suddenly "into a town, during the period when the surrounding "country was unsettled by war and invasions, and when "the East India Company began to dream of conquest and "annexation, in lieu of simple trading.

"Its growth was dependent on an accident, that is, on the "presence of the English Factory, and on the fact that, "in the struggle among foreign traders for supremacy in "the East, the English proved themselves the strongest, "able not only to protect themselves from the tyranny and "extortion of native rulers, but the numerous communities, "who were bound up with them in commercial relations.

"As Madras was in its early days, so will it probably re-"main to the end of the chapter. It is the head-quarters "of Government, and the wealthiest and most influential "of its native residents are either connected with the ad-"ministration of the Government, or have derived their "wealth and position from those formerly in Government "employ. Beyond the official classes, and their very numer-"ous dependents, the few import and export merchants,

" money lenders, retail dealers, and bazaar men, necessary to " supply their wants, there are no classes of persons who con- " tribute to the wealth or prosperity of the place. From " a sanitary point of view, we have to look at the popula- " tion of Madras, as made up very largely of a people bor- " dering closely on the confines of actual poverty. A popu- " lation that, if it can find a sufficiency of plain food and " scanty clothing is well off, but that has no surplus income " to expend in house decoration, or in the provision of " modern sanitary appliances, such as towns of the same size " in other countries may necessarily be expected to enjoy... " ..... There are many localities within the area of " the town limits that are fairly healthy, but these healthy " spots are not to be found amidst the older portions of the " town, where the soil has become sodden with the filth of " bygone generations, and where the air is polluted by gase- " ous emanations from sewers of indescribable foulness, and " where the subsoil water consumed by the population has " been tainted from the pollution of the earth. In these por- " tions of the town we shall assuredly find that the people " are a sickly and short-lived race."

As regards deaths among soldiers Bellary has been the healthiest station in the Presidency for the last ten years. This has been coincident with a cycle of dry seasons and a perceptible fall in the level of subsoil moisture. Bellary used to have good gardens and grow rich grapes. These are all gone. Sometimes there is barely enough water to supply the troops.

The average jail population during the year was 9,299. The admissions were only 779·9 per 1000, the daily sick 30·3, and the deaths 17·9. Considering that the jail population is of all ages and composed of men of " wild and precarious modes of existence," we think with our author that this mortality is as low as it is possible for the most perfect sanitary regulations to make it; that the " sanitary victory as regards the jail administration of this Presidency is the completest triumph that we can possibly claim." In ten years the hospital admissions have been reduced by more than one-half, and the mortality nearly three fourths. The sickness and mortality in the District Jails is always greater than that in the Central Jails. This is partly due to their defective sanitary arrangements, but Mr. Cornish thinks it is mainly due to the fact that their prisoners are chiefly short-sentence men, while those of the Central Jails are mostly

long-sentenced. He says that "there can be no question "that the first and second years of life in jail are the most "trying to the health of the criminal classes. The complete "change of life involved in confinement within jail must in "itself have considerable influence on health &c." The decline in the mortality from cholera, diarrhœa, dysentry, dropsy and anœmia in recent years has been very marked, and there can be no doubt that this has been wholly due to improved sanitary arrangements especially as regards diet, ventilation and conservancy. Nowhere has the dry earth system proved such a perfect success as in our Indian Jails, and it would be well if some eminent sceptics at home would come and see and be converted.

The subject of registration of births and deaths is not yet a pleasant one to consider. The registration of births especially has been a failure hitherto. The last census has shown the population of the whole Presidency to be slightly over 30,000,000, while the total number of births registered has been only 517,109 as only 17 per 1000. The number of deaths recorded is almost equally absurd, being only 444,371, or only 14·7 per 1000. The figures are steadily improving however and in time, when all prejudices are removed, we may expect accurate returns.

The much disputed subject of cholera comes next to be treated. We read that the emanation of cholera that left Lower Bengal in 1863 did not finally die out in some districts of this Presidency until the first quarter of 1868: also that the epidemic still prevailing in some parts of Southern India in the early part of 1872 left Bengal in 1868. It is hence concluded "that the duration of a cholera epi-"demic in southern India is from four to six years, that it has "distinct periods of development, of vigorous life, and decline, "and that the latter stages of the 1868 epidemic had com-"menced in the year 1871." A remarkable peculiarity has been noticed in the progress of the epidemic. While its general direction has been southward like that of all cholera epidemics, in 1871 it made a distinct backward or Northern movement into districts which had been passed over untouched in 1870. It is pleasant to notice that the mortality from it has been much less than from the previous epidemic. Many carefully observed facts are recorded in this report which tend to prove that cholera spreads from one village to another and from one district to another by human intercourse, and that its local spread in individual towns and

villages is largely favoured by the use of contaminated water. There is nothing whatever to show that its progress is favoured or obstructed by the wind. The cholera which cut up the poor Hussars at Secunderabad has been traced with tolerable certainty. They got their water supply from a well on the parade ground, open to all, the immediate neighbourhood of which was used by native travellers as a latrine. Cholera appeared in the bazaar at Secunderabad on the 20th May attacking and killing three travellers who arrived there two days previously from a district at the east end of the Nizam's country where cholera prevailed at the time. On the 22nd the wife of a sepoy was said to have died of it. On the 23rd a party of travellers came from the east through villages affected with cholera and encamped close to the Hussars' barracks. On the following evening it broke out among the Hussars and in 48 hours 53 persons were attacked : the whole force of the outbreak was at an end practically after the fourth day. The water supply was changed as soon as the disease made its appearance. In the case of an outbreak at a place called Kotapully in the Kurnool district in January 1871 ; some travellers arrived there from cholera-stricken districts on the 23rd, and left on the 24th, three of them were seized with cholera on the 24th, and on the 25th 41 of the villagers were attacked. Only a few more cases occurred and then the disease died a natural death. This was the only outbreak of cholera in the district during the year. The water supply at Kotapully was from a shallow open well frequented by travellers and villagers. The water was impure and liable to pollution,"and the disease broke out " on the second day after the arrival of the pilgrims, three of " whom suffered from it during their stay in the place, *i. e.*, " the outbreak of disease occurred at a time when the " fermentation changes in an assumed choleraically polluted water had had time to take place." In this case the facts are strongly in favour of the disease having been caused by polluted water. It is curious however that the disease should stop so suddenly when there is nothing to show that the water supply was changed as at Secunderabad. If the outbreak was due to cholerical contamination of the water by the pilgrims, why did it cease so soon ? Since the disease prevailed extensively in the village on the 24th the water must have been fearfully polluted on that and succeeding days, and yet the cholera died out in a day or two. It is ust possible that all the predisposed persons were attacked,

and that the remainder were proof against it for the time being.

20,823 deaths from small pox were registered during the year. The wonder is that the mortality was not greater. Vaccination as at present carried on is no check to its spread. Not five per cent. of the childern born are vaccinated under one year of age. This is not the fault of the vaccinators but of the system. What is wanted is compulsory vaccination, and there can be no difficulty in this now that a large proportion of the births are registered. The evidence of 1871, like that of previous years seems to show that "in "the south of India cycles of cholera and small pox alternate, "so that when cholera is raging, and reaping a full harvest "of victims throughout the length and breadth of the land, "smallpox is for the time being in abeyance, &c."

In regard to fevers some new and important facts appear to be made out. Hitherto the presence of malarious fever in any locality was supposed to be fully explained by local conditions of soil and air. The sickness statistics of the last five years however show that we must take wider views of malaria, and seek for other causes of its prevalence and spread. These show that "Malaria, or whatever we may "choose to call it, has existence and laws of movement in- "dependent of mere local conditions of climate and physical geography." A malarial wave has been passing southwards and westward for the last few years. It reached Salem in 1869, and Coimbatore and Trichinopoly in 1870. This is shown by the accompanying table which gives the mortality from fever.

Districts	...	1868	1869	1870	1871
Salem	...	5,771	9,271	15,658	19,500
Coimbatore	...	3,425	3,483	7,612	11,925
Trichinopoly	...	2,521	2,689	6,289	9 942

The mortality from this cause in South Canara has increased in 1871. The observations have not extended over a sufficient number of years to warrant us in drawing any practical conclusions as yet, but enough has been done to encourage Sanitary Commissioners in working out the problem.

We have not noticed all the subjects treated of in this volume, but we think we have written enough to show its great value. We do not know any work more useful for Assistant Surgeons of the Indian service on their first arrival in the country.

MEDICAL MISCELLANY.

A new means of combating muscular contraction.

Every one is familiar with the resistance offered by muscular contraction in the reduction of dislocations or of fractures with displacements of the fragments. In order to avoid this difficulty, resort is had to reduction as soon after the accident as possible, to profit by the condition of stupor existent at that time. After this period etherization becomes necessary. M. Broca has devised, says the *Lyon Médicale*, a means which is void of the inconveniences of anæsthesia; it is compression of the principal artery of the wounded limb. The muscles deprived of the blood necessary for the exercise of their functions by compression of the brachial or femoral arteries are unable to contract.—*Medical Press and Circular.*

The Female Medical School at Zurich.

The *Revue des Deux Mondes* gives some interesting statistics of the female students at Zurich since the year 1864, when two Russian ladies first ventured to attend the Zurich classes, a couple of Zurich dames having been previously admitted to certain lectures. The appearance of the Russians led to a discussion in the senatus in 1865, when parties were pretty evenly balanced; but no decision was arrived at, as it was thought the ladies would hardly persevere in their designs. In 1867, in fact, one of the visitors did withdraw; but the other, who had made real progress, announced her intention of going up for the degree of M.D. This necessitated admission as a matriculated student of the University, to which the rector gave his consent without further consulting the Senatus, under the impression, apparently, that it would prove an isolated case. The lady passed with honours, and before the close of the year two more female students arrived from England. In 1868 Switzerland and America each sent a representative, and two years after Austria and Germany. By far the largest number, however, came from Russia. In 1869 there were nine Russian students of the fairer sex, and at the end of 1871 no less than seventeen. There are now sixty-three in all at the University, fifty-one of whom, including forty-four Russians, attend the medical, and twelve the philosophical courses. The large number of Russians may be explained by the fact that for

some time ladies have been admitted to the gymnasia or upper schools of the Russian provincial capital, and even to a special course of lectures at the Universities. Since 1867 six ladies have taken the degree of M.D. at Zurich and seventeen have abandoned their studies in despair. As the medical students at the University number at present 208, it will be seen that the ladies are nearly one-fourth of the whole. Of the six Zurich M.D.'s, two are practising in St. Petersburg, one of them in partnership with her husband, a third is with Dr. Garrett-Anderson in London, the fourth Physician to the Children's Hospital in Boston, and the fifth assistant to Dr. Bierner, Professor of Clinical Medicine at Zurich.—*The Doctor.*

Introduction of corrosive sublimate hypodermically, in Syphilis.

Dr. Carl Proegler, of Naperville, Ill. (*Chicago Medical Jour.*), thinks, with Prof. Lewin of Berlin, the subcutaneous injection of corrosive sublimate in syphilitic cases is decidedly preferable to internal administration, fumigation, inunction, or introduction of mercurial suppositories. From statistics given by Prof. Lewin, Surgeon-in-chief of the syphilitic wards of the Charity Hospital, Berlin, where upwards of 2,000 patients have been treated by the subcutaneous method with the mercurial sublimate, it was found that from $1\frac{1}{2}$ to 3 grains of the bichloride is all that was needed for the average of cases, including the most obstinate forms of tertiary syphilis. The quantity used daily depends somewhat on the gravity of the case. Ordinarily, doses from $\frac{1}{12}$ to $\frac{1}{4}$ of a grain are administered subcutaneously once each day. If the prodromes of salivation occur, a pause of three or four days may take place, when the treatment may be resumed. When a patient exhibits a peculiarly sensitive diathesis, and whenever the sublimate injection is followed with pain, a small quantity of morphine may be added as a corrective. In this class of cases he has added the morphine, or applied externally a chloroform liniment, and never had any irritation or abscesses resulting.

Prof. Von. Siegmund (*Berl. Klin. Woch.*), in commenting on his 200 cases recently treated with subcutaneous injections of sublimate, says that there occurred but two abscesses in all, which resulted mainly from unskilful insertion of the liquid. He has seen no affection of the gums, no disturbances of the respiration or circulation, nor any other mercurial effects of any moment.

Dr. Proegler treated last year, in the German army, over 150 cases of syphilis by this method with success, and also, conjointly with Dr. Gale, of Aurora, over 40 cases in private practice.—*The Medical Record.*

Belladonna in Opium Poisoning.

Dr. R. D. Bone, stimulated by a discussion at the Tennessee Medical Society, upon a paper by Dr. Alexander, "On Opium poisoning treated with large doses of Belladonna," reports a case in the *Nashville Journal of Medicine* for August.

A child, aged seven months, through mistake of the mother, took morphia sol., grs. ij. After profound coma had endured some hours, belladonna ex. grs. ijss. (rubbed in water as a vehicle) was given every ten minutes, till ten grains had been taken. It was introduced by enema.

It must be remarked that other means were used conjointly with the belladonna, as a stream of cold water to the head, hot pediluvia, flagellation, a strong decoction of green coffee by enema, &c.

The first appearance of resuscitation was increased in the number of respirations per minute, then dilatation of pupil—at first continually alternated between dilatation and contraction, till at last a full dilated pupil was shown. Anæsthesia gradually subsided, muscular action resumed its office, and in two hours the child cried, and from that time recovered.

It is also mentioned that Dr. N. G. M. Walker had a case where laudanum was taken for suicidal purposes, in which belladonna thrown into the stomach had the happiest effect.—*The Doctor.*

*Physiological Antagonism between Atropia and Morphia.**

Miss C., æt 25, a lady of nervous temperament, and who had on several occasions suffered from various forms of neuralgia, consulted me for severe neuralgia in the left side of her face and head, produced by a dental operation to which she had recently submitted.

Having, on previous occasions noticed the hypodermic employment of morphia and atropia combined, to be followed, in this lady, by the happiest results, I determined to use this mode of treatment again for the present existing suffering.

I may here observe that my experience coincides with the teaching I acquired while a pupil of Dr. Stokes—namely, that to obtain the best results from the use of hypnotics, it is advisable to administer the drugs at the usual hour of sleep so as to anticipate, as it were, the normal process of habit.

In accordance with this principle, I paid my patient a visit at 10 o'clock in the evening, purposing to inject under the skin of the arm $\frac{1}{4}$ grain of acet. morphiæ, along with 1-50th grain of sulph. atropiæ.

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* Read before Medical Society of the College of Physicians of Ireland. By Dr. J. Magee Fenny.

The addition of the atropia diminishes the tendency to nausea, so constantly following the administration of morphia alone, and produces anodyne effects not to be obtained by morphia.

As, however, my atropia solution had been in my possession for over three months, and as I noticed several fungoid bodies floating through it, I conceived it had lost much of its strength, and that I ought, therefore, so as to obtain its full effects, to give of it a larger quantity than usual. Acting on this conception—a proceeding which the circumstances that followed made me greatly regret—I administered subcutaneously double the usual quantity of the atropia solution, along with $\frac{1}{4}$ grain of morphia. In about twenty minutes, Miss C.'s maid hastily summoned me to her bed side.

The condition I found her in was quite new to me. The symptoms were as follows:—Complaining of great cold, so that she was shivering and trembling all over (to which perhaps alarm may have tended), and her teeth chattering, her feet and hands were cold, although a hot jar was placed to her feet, and additional blankets covered her. The tongue was dry, parched, and rough, and this condition evidently extended to the pharynx, as she complained of dryness of the throat, and constantly asked for drinks, although, when they were given, she was hardly able to swallow them. Her speech was thick and inarticulate; she complained of dimness of vision, saying she could not see me, and that flashes of bright light passed before her eyes. The pupils were much dilated and unaffected by approximating the light of the candle towards them. The pulse very small, up to 130. Respiration 32, and very shallow. On being questioned why she could not draw a deep breath, she replied that she was caught on attempting to do so.

The case was evidently one of atropism, produced by an overdose of the alkaloid. Hoping the ill-effects would shortly pass away, I remained beside her to watch the result—but instead of becoming better, I soon saw the case change, from one of simple interest, into one of no small anxiety to me.

In about ten mintes, she evidenced great uneasiness, tossed about, flexing and extending her arms and legs: she now became delirious, talking on various subjects, being quite unaware of my presence, and imagined several persons were in the room, giving directions to them on various domestic matters. She grasped at imaginary objects in the air; and from, no doubt, the parched state of her throat, frequently attempted to pass her finger to the back of the throat, and nearly succeeded, on one or two occasions, in producing vomiting. The pulse still kept high, and I determined to send for additional aid and advice. Before doing so, however, the thought occurred to me to try the effect of a dose of morphia as a general physiological antidote—as the recollection of cases of belladonna poisoning having been successfully

treated on this principle by Dr. Wharton, flashed across my memory. (These cases are detailed in the MEDICAL PRESS for 1862.)

Accordingly I injected ⅓ grain of the acet morphia.

In less than five minutes I observed the restlessness and jactitation cease, the skin to become warm, and the respiration fall to 20, while the pulse came down below 100, and was fuller. In a few minutes afterwards—ten altogether from the second injection—my patient was sound asleep, and in a fair way to spend a quiet night. After remaining in the house about half an hour longer, I took my leave, and in the morning I learned she had slept well, had taken a hearty breakfast and that the neuralgia had entirely disappeared. She visited me in my study in the afternoon, and with the exception of slight inconvenience arising from the still dilated condition of the pupils, she expressed herself as being as well as ever.

The points of interest which this case furnishes to the scientific and the practical man alike are neither few nor insignificant. Whether the quantity injected would have, if left to itself, ended in the same happy way, or otherwise, I am unable to state, but the points of resemblance between the symptoms just detailed, and those of a poisonous dose of belladonna, were too striking to buoy me up with any such hope as that.—*Medical Press and Circular.*

Condemnation for concealment of birth; delivery six weeks after.

A girl named Bernard, aged 20, was about 7 months advanced in pregnancy when, on the 8th October 1868, some hæmorhage came on and the pregnancy seemed to have disappeared. A crime was suspected. Questioned, the girl confessed that being conscious of a flow she retired to the water-closet, where she remained ten minutes, 'there,' she said 'every thing left me: I had no time to look because I was called away.' The midwife of a little place in the neighbourhood and the District Medical Officer both affirmed that the girl had been recently delivered. Nevertheless, when the water-closets were examined by order of the Police no fœtus was discovered. Inquiries were repeated. It was urged upon the girl that it was her interest, in order to escape severe punishment, to make free and full confession and she was asked if she had not thrown her infant into the pig-stye? After protesting for some time against this supposition she confessed at length that she had done as was suggested. But the pig-stye was very carefully cleaned out and neither human remains nor trace of blood were found. After a trial, in which her advocate appealed to the indulgence of the tribunal, she was pronounced guilty, on

her own confession, of the crime of concealment of birth, with the remark appended that it was not established that the child had lived; and she was condemned, on the 6th November, to six months' imprisonment. Adèle Bernard, who in consideration of her spontaneous confessions had been neither arrested nor imprisoned, presented herself at Vic to undergo the punishment to which she had been condemned and it was perceived that she was in a condition of advanced pregnancy. Transferred to the Departmental Hospital at Nancy, she was there delivered, on the 24th December, of a well-formed female child at full term. At that time the ten days allowed for appeal had long elapsed: but the Procureur-General who is allowed two months within which he may interfere, exercised his right in the girl's favor. and she was brought up to Court from the Departmental Hospital on the 18th January, 1869. Being there questioned she declared that her parents and the midwife had beset her to induce her to make confessions; that they never ceased telling her that if she did not tell what had become of her child she would be taken to Vic (in spite of her ill-health) put in prison and condemned to the galleys for 15 or 20 years. Subsequently they told her that she must not retract her declaration. They had terrified her by setting before her the severe punishment which awaited her if she did not confess. The Court quashed the conviction and discharged the prisoner. This case illustrates the fact that judicial confession, which in ancient jurisprudence afforded the highest degree of proof, and which is still in England, so far relied upon as to dispense with an appeal to the jury, is far from supplying absolute certainty. How worthless was the system which, in order to obtain the confession of the guilty, legalized torture for the purpose and declared emphatically that an innocent person would never declare himself guilty contrary to the fact! How much are they mistaken who to render judicial error impossible lay down as a rule that the erroneous condemnation of an innocent person will elicit from him such protestations that their eloquence would be irresistible!—*Jour. Des. Conn. Méd.*

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*Chloral Hydrate in Hydrophobia.**

"There has been a case of Hydrophobia, a grass-cutter of the 1st Cavalry, who was bitten 5 weeks since by a jackall. I notice the case, because the administration of Chloral Hydrate most completely controlled the most distressing symptoms."

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* Extract from Diary of Dep. Inspr. Genl., I. M. D., Nagpore Force, Kamptee, 12th October 1872.

Blue light as an organic stimulant.

At a recent meeting of the Philadelphia Agricultural Society, General Pleasanton read an interesting paper on the effects of sunlight on plants and animals, when transmitted through blue glass. Geraniums which had become unhealthy recovered their vigor and became more deeply coloured when covered with blue glass; and the branches of the same grape-vine showed a remarkable difference in their growth of leaves according as they were or were not covered with blue glass, the leaves on the former having a diameter of six to eight inches, being of a deep-green color and perfectly healthy; while the uncovered branches were only two inches in diameter, and of a pale, sickly yellowish color, indicating a feeble vitality. The paper also mentioned a case of the wife of a Philadelphia physician who had for some time been suffering from a complication of disorders which had baffled the skill of her physicians, and who, on the suggestion of General Pleasanton, tried the following plan: Every other pane of glass in one of the windows of the patient's room was removed and blue glass substituted, and the patient required to expose her back and spine to the action of the combined blue and white lights for thirty minutes each day, at the same hour. At the commencement of treatment she was unable to sleep or eat, was in a miserable condition, and wasting rapidly. At the end of ten days the pains in her back were less, her hair had commenced growing thickly, and there was a marked improvement in her general condition. In three weeks she was almost entirely well.—*The Medical Record.*

Treatment of Goitre.

Th. Sittell, M. D., of Cincinnati (*The Clinic*), recently had a patient with goitre, which measured when first seen $21\frac{1}{4}$ inches in circumference. The treatment was adopted as recommended by Lücke, which consists in the injection into the tumor of the tincture of iodine. Within three months eleven injections were made into its parenchyma—in from 10 to 25 drop doses—which reduced the tumor four and one-fifth inches; and its steady and constant decrease was evidence of the efficacy of treatment, and promised future perfect success. The digital compression after removal of the syringe and the closure of the wound of penetration by adhesive plaster as recommended by Lücke were always observed. The suggestion, too, was adopted of permitting the needle to remain in the tumor while the body of the syringe was withdrawn to be refilled that there might be the least possible danger of injecting the iodine into a minute vein. The almost entire absence of local reaction was probably due to the fact that cold dressings were always applied to the surface after each injection.—*Ib.*

Ether versus *Chloroform.*—By J. Morgan, M.D., F.R.C.S.

I noted this day four patients I etherised. One, a very strong man, where extraction of a cataract* was performed. Insensibility was obtained in ten minutes; the pulse remained steady; there was no sickness of stomach; and the operation was most successfully and happily terminated—just as in a similar case which I etherised a few days previously.

Another vigorous patient, of 17, in four and half minutes sank quietly into insensibility with the most perfect result; pulse from 80 to 86; respirations increased six per minute. I occupied about five minutes in operating; and the patient emerged from insensibility equably and gently—there was no excitement or sickness.

Another, of 24, became influenced in ten minutes, with no excitement beyond bursts of laughter; there was no sickness of stomach. I occupied five minutes in operating; the recovery was most equable.

Another, of 30, became influenced in eight minutes, and fully so in ten minutes, with no excitement or approximation to convulsions, and no sickness. I occupied six minutes in operating.

In the last case I had used chloroform three times previously, and ether once; and in the second last case I had used chloroform five times, and ether once. In both, but in the second last more particularly, the convulsive stage under the use of chloroform was always very severe and protracted.

Ether produced *incomparably* superior results in every way, accompanied by a sense of much greater security. I particularly noted these instances, as I had observed the previous effects of chloroform on the patients.

It is but natural that we should examine with attention the expressed opinions of surgeons as to an agent which has been most used in America, the country which may be allowed to have been the birthplace of the application of anæsthetics in surgical practice. Since the time when Dr. Morton, so long since as 1846, introduced the use of ether as a "pain-destroyer," ether has stood the test for the period which has since elapsed, and ether is still, in that country, the more universally adopted means of obtaining insensibility.

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* By Dr. Jacob.

I find in the last very accurate surgical work which has issued from the press, 1871, the question of Ether *versus* Chloroform is thus reviewed* :—

"Chloroform is more prompt in its effects; the patient is usually quieter while coming under its influence; it is less apt to cause vomiting; a smaller quantity suffices to produce anæsthesia, and the patient reacts more quickly when the inhalation is stopped. It, however, requires greater care in its administration than ether, and its use is attended *with much greater risk to life!* This statement gives my own estimate of the relative merits of these agents, and I believe corresponds pretty closely with the opinions usually entertained on the subject. It is right, however, to state that Dr. Lente and Dr. Squibb, of New York, believe that anæsthesia may be induced by means of ether, as quickly as can safely be done by means of chloroform, and with a quantity costing less and weighing very little more than the requisite amount of the latter; and other writers have maintained that vomiting is, at least, as frequently caused by chloroform as by ether."

In support of the latter observation, I myself refer to the cases I have just witnessed, and that in the last thirty patients I etherised, within ten days sickness of stomach occurred but in two, and in these instances, some food had been taken one hour and a half before operation.

"For my own part," says Dr. Asshurst, "I confess *I prefer ether* in a very large majority of cases; it is certainly, I think, *safer* than chloroform, and is sufficiently convenient for almost every case that the surgeon is called upon to treat. There is *no danger*, as in the case of chloroform, of the vapour being too concentrated; indeed, some surgeons, as Dr. Lente, endeavour to prevent even the slightest admixture of air."†

We have thus reported, by the most recent authority, the value of the arguments for either chloroform or ether, "*safety to life*" and the avoidance of those very unpleasant accidents, "deaths by chloroform," presenting the strongest claims in favour of Etherisation, and justifying the candid remark of Mr. Erichsen,‡ of London, when he states,—"The fatal consequences which have attended the employment of chloroform, have caused American surgeons almost entirely to trust to ether in preference. Ether is certainly a *safer* agent than chloroform, but few deaths having resulted from its administration; and the only argument

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* "Principles and Practice of Surgery." By J. Asshurst, p. 75.

† *Ibid*, pp. 75-77

‡ "Science and Art of Surgery," p. 17. London, 1869.

in favour of the use of chloroform rather than ether is, that chloroform is the most *convenient* agent! its effects being produced more quickly, and no disagreeable smell being left, as in the case of ether." Fortified with such an opinion from so eminent an authority as Mr. Erichsen, M. Diday would be well supported in passing the condemnatory resolution I have already referred to, "that any surgeon using chloroform instead of ether as an anæsthetic would be culpable."

Surely, it would be a small solace to a husband for the death of a wife, or to a wife for that of a husband, to be told that chloroform, which caused the loss of what was held most dear, was used, simply because, while it was far more dangerous, "it was more convenient." Indeed, in a case of death by chloroform, it appears to me that legal if not moral culpability might be strenuously urged against the administrator, for using an agent admittedly *more dangerous* than another, simply on the ground as stated, and "the only argument" in its favour, that it was "*more convenient.*" The question is thus becoming daily more serious and debatable.

The late American War furnished enormous opportunities of testing the merits of ether. In one of the most recent and critical treatises on Military Surgery,* the preference is given to ether, supported amongst other arguments by the fact that, taking the reports of the General Hospital (Mass.), for ten years, 1850 to 1860, where ether was exclusively used, "notwithstanding the greater severity of the cases (mostly railroad and street accidents)and the more crowded condition of the hospitals, the average mortality was substantially the same as *before* its introduction. This testimony demonstrates the *superiority of ether* as compared with chloroform." "Ether, ought generally to be preferred to chloroform as being less liable to destroy life immediately."

Few more cogent arguments could be collected than this ten years' epitome of the successful result of ether, when it is remembered that these cases did not even occur in military practice, where healthy and active soldiers were the unfortunate sufferers, but in a general hospital, where cases of all varieties, and in diverse circumstances of life, were encountered. It may also be admitted that operations were undertaken with the assistance of etherisation, which, previous to its introduction, would have been unattempted; yet, while pain was absolved by this "comparatively, though not absolutely, innocuous agent," as styled by Prof. Hamilton, the statistics prove that it in no way contributed to an increased mortality rate.

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* Dr. Hamilton, Professor of Military Surgery, Bellevue Hospital, New York, p. 621.

On inquiring as to the recent practice in the large American institutions, I find in the excellent and compendious Reports of the Boston City Hospital, 1870—including 1,113 operations on in-patients, and 1,062 on out-patients—that amongst all those reported, with such critical procedures as excision of the upper jaw, œsophagotomy, ligature of large arteries, including that of the arteria innominata, excision of the hip-joint, amputations, &c. ether alone was invariably used, and no ill-consequence or apprehension has been noticed.

In Bellevue Hospital, New York, with something like 1,800 beds, chloroform has never been used for the last four years, with the many hundreds of operations necessarily constantly performed there. In the Charity Hospital, Blackwell's Island, New York, where etherisation alone is used constantly, not hundreds, but thousands of cases have been submitted to its influence without one *contretemps*. This I have the authority of the Resident Officer for stating, as he himself administered the ether to a very large number of these patients*; while, on the other hand, in the cases in which he saw chloroform used, namely, two cases of hernia, one of hare-lip, and one for repair of a bitten-off nose, there was always much reason for apprehension, and he witnessed the death of one of the patients from the effect of the chloroform, which was being given where an operation, though painful, but no way involving life (the formation of a nose), was about being performed; it was never commenced, as the patient, a strong healthy looking woman of 35, died on the table, notwithstanding all the means anxiously and actively used for re-animation.

Dr. Mott is said to have preferred chloroform to ether.† Evidently, however, Dr. Mott failed to leave the impress of his preference behind him, as in neither of these Institutions—to both of which he was attached—has anything but ether ever been used since his death. I have obtained the summary of one very remarkable case of a large aneurism of the thoracic aorta, treated by galvano-puncture, at Bethove Charity Hospital, where ether was used on several occasions without any ill consequences, and with a feeling of perfect safety where chloroform would have been inadmissible. It is so remarkable that I append it in illustration.

Bridget Dillon, aged 57, an Irish woman, and comparatively strong; suffering from a large thoracic aneurism: submitted to the attempt of obtaining occlusion by the galvano-puncture; she was etherised, and came under its influence in about eight minutes; needles were introduced through the chest into the tumour, and connected with a current of seventeen cells. There

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* Dr. Godon.

† Hamilton's "Military Surgery," p. 612.

was no pain or ill consequence whatever. On one occasion the use of the needle was tried *without* ether; but the pain was excruciating beyond endurance.

The whole question of the comparative use of the various anæsthetics has been lately very fully reviewed by Dr. W. Coles, who read an elaborate paper replete with overwhelming evidence, at the Medical Society of Virginia, this last session. The arguments in favour of Ether *versus* Chloroform are unanswerable when the great question of *danger to life* is considered. By combining the American statistics, collected by Dr. Andrews, of Chicago, and those of England, by Dr. Richardson, of London, we obtain the following general view of the absolute and relative mortality caused by the several anæsthetic agents in use:—

	Deaths.		Inhalations.		
Ether ...	4	to	92,815 ...	or 1 to	23,204
Chloroform ...	53	„	152,260 ...	„	2,873
Mixture of Chloroform and Ether ...	2	„	11,176 ...	„	5,588
Bichloride of Methylene ...	2	„	10,000 ...	„	5,000

These figures the author regards as the most valuable and reliable that have ever been published in reference to the *mortality* in anæsthesia. They demonstrate a state of facts so absolutely at variance with the received opinions of five years ago, as *to become perfectly startling.* They indicate that chloroform is *eight times more dangerous than ether, twice as dangerons as a mixture of chloroform and ether,* and as far as experience goes, it is *more dangerous than bichloride of methylene.*

In view of these facts the question arises—Will chloroform maintain its present popularity as an anæsthetic in surgery? We do not believe it will; unless some method, other than we have at present, is devised to lessen the risk dependent on its use, we cannot but think its popularity must decline. In the face of such figures as adduced, *chloroform cannot, and ought not, to supersede ether.* The inconveniences attending the use of ether are more than compensated for in the risks from chloroform.*

Nothing can put the question in a plainer light. One death from ether in 23,204 cases reduces the risk to a nominal amount.

It is to be recollected that in etherisation there is not the constant and harassing danger ever present; the surgeon is freed from the anxiety that more or less accompanies him into the operating chamber, and his attention can be altogether devoted to the operative procedure in which he is immediately engaged, not, as is too frequently the case, distracted by inquiries as to the condition of the patient, and the influence which the chloro-

* Hay's *American Journal,* April 1872, p. 488.

form is exciting. Friends who are intensely interested, are relieved from an additional cause of anxiety which the occasional notice of "Death by Chloroform" may have impressed them with, while equal, if not greater, security of the avoidance of pain is secured, with *eight times less danger*. Facts such as these cannot fail "to become perfectly startling," and deeply to impress a patient about precipitating himself into the mysterious sleep of insensibility.

With such convincing statistics from the mother country of anæsthetics, where Ether is used, and from Great Britain, where Chloroform was introduced and is used,—with the opinion expressed in the latest standard work* from the former country of unalterable faith in the use of ether,—with the opinion, also, of the author of a standard work† in Great Britain, where, though chloroform is the more largely used, its danger is admitted, and the only argument adduced in its favour is that of convenience; in the face of the discussion at present being agitated on the Continent‡, and with the occasional reports which crop up of deaths ftom chloroform, the dangers of chloroform, and the hair-breadth escapes from chloroform, it is evident that its popularity must wane when calmly contrasted with ether as an anæsthetic agent.

The surgeon who makes use of chloroform will employ an agent not only *eight times more dangerous* than ether, but actually the *most* dangerous of the other agents in use.

Should he not have put these issues before the patient, and should any casualty occur, his responsibility may be indeed seriously brought into question.

The critical examination into the comparative merits of Ether and Chloroform which I have already referred to, as conducted by the Committee of Investigation appointed by the Royal Medical Chirurgical Society of London, resulted in important observations.

The inquiry was aided by the use of the hemadynamometer in testing the effect of the heart's action and of the influence of these agents upon it. The report states—"The essential difference between the action of Chloroform and of Ether is to be found in the effect produced upon the heart. The first operation of both agents is to stimulate the heart and augment the force of its contractions; but, after this, Chloroform *depresses* the heart's action, whereas Ether appears to exert but little influence upon the muscular movements of that organ." The general accuracy of this remark, though tested by so comparatively coarse an

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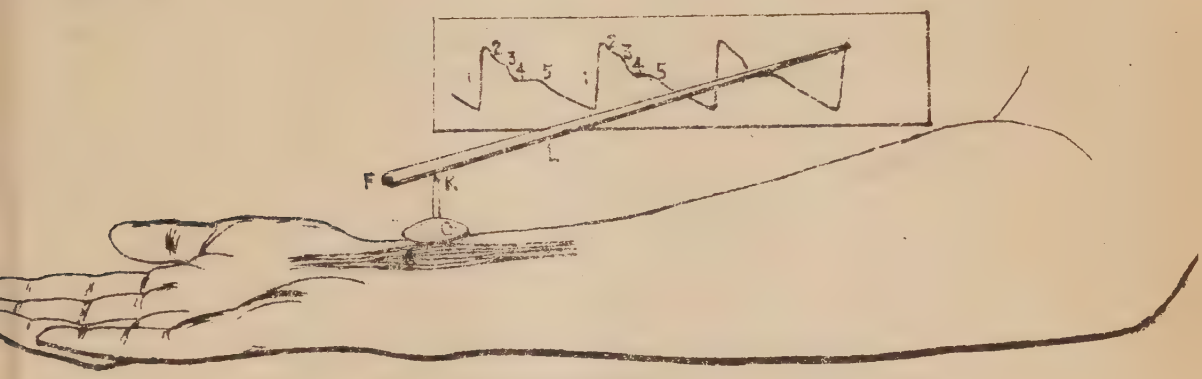
* Asshurst.
† Erichsen.
‡ Société de Médecine.

instrument, is borne out by observation of the pulse-writing as indicated by the sphygmograph, an instrument of far greater delicacy which has been since introduced into practice; it affords direct instruction in comparing the influence of etherization on the pulse, with the healthy condition, by the evidence of the writing.

The accompanying outline of the principle of the sphygmograph will serve to explain briefly its mode of action as writing from the natural soft pulse:—

Fig. 1.



a. The pulse, showing the artery in the act of pulsation.

c. k. The lever, which communicates its pulsations by being laid on the wrist.

f. l. The index, or pen, which marks the pulsations on a slip of paper, or glass, which receives the writing by being worked along by a rack and spring.

On examining a pulse writing, the component motions may be thus analysed—

Vis a tergo.
1. The First Ascent. Due to the jerk, by the propelling heart.
2. The Indentation. Due to the elastic re-action of the blood-vessel itself.
3. The Elevation. Due to the continued force of the heart's contraction, sending on the blood fluid.
4. The Break. Due to the sudden stopping off of the heart's action by the valves shutting.
5. The Second Elevation. Due to the action of the blood-vessel itself.

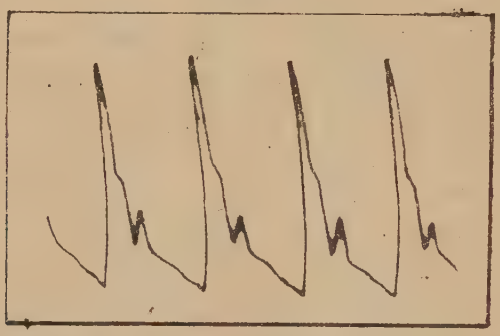
It has already been shown by the Chloroform Committee above quoted, that ether exercises a stimulating effect on the heart's action, instead of the depressing and sometimes fatal one of chloroform. It therefore follows that sphygmographic delineations, or pulse writings, should give some aid, as typifying the immediate effect of etherization on the heart itself. If the general influence of the "vis a tergo" due to the immediate propulsion of the blood from the heart be understood, in causing the ascent

of the pulse-writing, with its succeeding fulness or distension, such evidence will be interesting, as showing the condition and vigor of the heart's action during the sleep of etherization.

In order to simplify the general conclusions as to the value of the indications, I add a bird's-eye view of some of the modifications of pulse-writings in various diseased conditions—more particularly with regard to the indications due to the "*vis a tergo*," or immediate influence of the heart.

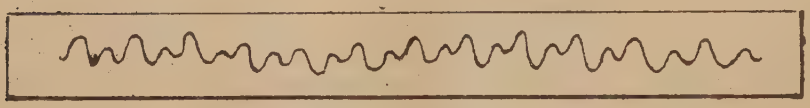
Typical pulse-writings of opposite characters will be instructive. Thus—taking an example of enlargement of the heart (Fig. 2.) The high elevation of the pulse-writing is remarkable, compared with the undulatory score of typhus fever (Fig. 3.) or again with the feeble indications of the flickering heart of a patient worn out by consumption, given during the last hour of life (Fig. 4).

Fig. 2.



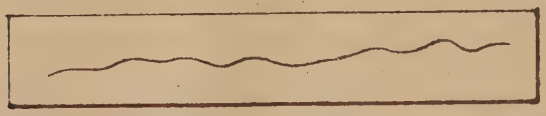
Pulse-Writing given by an Enlarged Heart.

Fig 3.



Pulse-Writing in Typhus Fever.

Fig 4.



The feeble Pulse-Writing of an Expiring Heart.

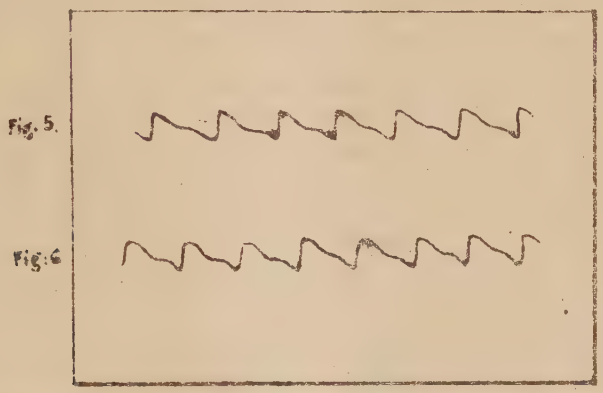
If these be compared with the copy of a writing given by the "Natural soft pulse after exercise and residence in the country," as shown in Fig. 1, the relative conditions and indications may be estimated.

The following specimens of pulse-writing, taken both previous to, and during etherization, prove that the effect on the heart was that already mentioned by the Chloroform Committee in 1864—

"That ether was a stimulant to its action."

Fig. 5 represents the pulse of a female patient, aged 25, who had been confined to bed for five months; pulse-writing taken before Etherization,

Fig. 6 represents it during the full influence. It will be seen that the heart power indication was rather stronger during etherization than before.



I selected another instance of a female, aged 17, also long confined in bed. The contrast of Fig. No. 7 taken before etherization, and of Fig. No. 8, during profound etherization, is notable; the elevation of the pulse-line showing the stimulating property of the ethereal influence.

Fig. 7.

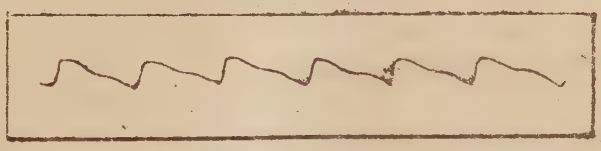


Fig. 8.

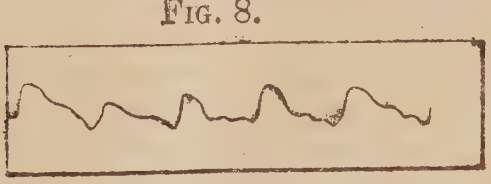


Fig. 9 represents the excited pulse-writing of a small and nervous female patient, previous to etherization and operation.

Fig. 9.

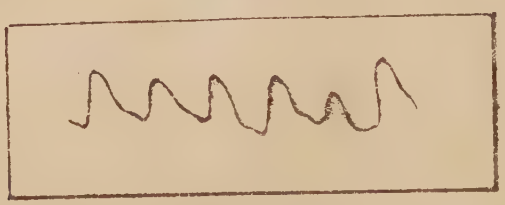


Fig. 10 represents the pulse-writing of the same patient, when steadied by etherization. The contrast is remarkably favourable.

Fig. 10.

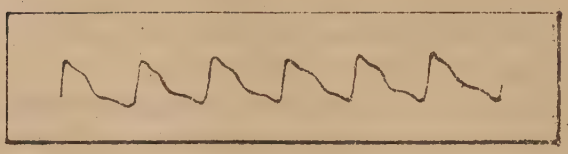


Fig. 11 represents the pulse-writing of a healthy young man of 22, previous to operation for artificial pupil—an affection which had not interfered with his general health.

Fig. 11.

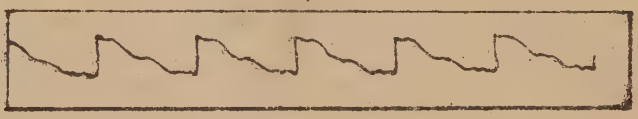
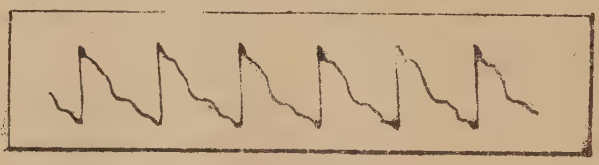


Fig 12 represents the same, when taken under full etherization and after the completion of the operation. A comparison of this pulse-writing with that of Fig. 1. will be ample evidence of the safety of etherization in its action on the heart.

Fig. 12.



I have taken all but one of these examples as the most unpropitious, occurring in patients of diminished health and vitality; yet it is evident that the most perfect anæsthesia could be invoked under the influence of ether, with an absolute stimulating effect on the circulation, and that the condition of insensibility could be maintained for a considerable time, yet there was no material alteration of the "pulse-writing," and the most perfect sense of security was established.

It is therefore established that—

While chloroform exerts a depressing influence on the heart, ether exerts a stimulating one;

And that chloroform is the most dangerous, while ether is immeasurably the safest of all anæsthetics,

On the opposite side it has been stated that

The only argument in favour of the use of chloroform is that of its being convenient (*a*).

However, on the other hand the only objections which have been put forward by the Committee as bearing against the use of ether were the comparatively insignificant ones of "disagree-

(*a*) Erichsen.

able odour," that it was "slower" and gave rise "to greater excitement than chloroform." The odour of chloroform, it is to be admitted, is sweeter and perhaps the most agreeable. Few people, however, dislike the odour of ether, and whatever objection there may be to the flavour, its exhilarating effects are such that many have found it a seductive substitute for alcoholic stimulants, even to the extent of producing intoxication. In Ireland, curiously, its virtues, if they may be so styled in this way, have been already appreciated, and as that province, whose inhabitants are peculiarly accredited with astuteness, has been the most noted for its consumption, we may conclude that it presents, despite its supposed disagreeable odour, the recommendation of being "good value" in producing the desired effects; indeed, the intoxicating and stimulating quality of ether has been known for a considerable time, and a *soupçon* of its use amongst the better classes of society has more or less existed. Mr. Draper (*a*), however, has lately put the question of the "*Use of Ether as an Intoxicant*" in so clear a light that it has attracted considerable attention. He states:—

"The floating idea that there are fair consumers of *Hoffmann's anodyne* and *perles d'ether*, for whom ether has never been prescribed, quite prepares one for the discovery that there is in the northern part of Ireland a number of people who, forswearing alcohol, supply its place with ether—a race to whom ether is what koumiss is to a Kalmuck, ava to a South Sea Islander, absinthe to a certain class of Frenchmen, or gin and whiskey to their more immediate neighbours. That they should take 'nips' of ether morning, noon, and night, as they would whiskey, and—for anything shown to the contrary—drink good luck or ratify bargains in a glass of ether, was not a thing to look for, and is, perhaps, without parallel in the history of narcotic stimulants. The facts rest upon the authority of a number of gentlemen, in their respective capacities of physicians, clergymen, ether-manufacturers, and druggists."

Its Mode of Use.

"The usual quantity of ether taken at one time is from two to four drachms, and this dose is repeated twice, thrice, or even four and six times daily. It is taken unmixed with water; indeed, its very slight solubility in that fluid would make this a useless precaution; but the usual practice is, to take first a mouthful of water, then the dose of ether, and again a mouthful of water."

Its effect.

"The intoxication produced by ether resembles that of alcohol, but is much more rapidly produced, and is more evanescent. The

(*a*) Mr. Draper in the *Medical Press and Circular.*

ether seems to be eliminated entirely by the lungs, and the breath of the ether-drinker always affords ample evidence of his addiction to the habit. I am credibly informed that at the fair of Draperstown—which appears to be the paradise of ether-drinkers—the prevalent smell is not, as at country fairs, of pigs, tobacco-smoke, or of unwashed human beings, but of *ether*."

Its Influence on the Health.

"I have not been able to learn that, apart from the moral ill effects common to all excitants and intoxicants, the habitual use of ether brings in its train any peculiar evils, and although it would be wrong to draw a conclusion from completely negative evidence, I am disposed to believe that the votaries of ether incur less danger from the habit than ordinary dram-drinkers; and there are two good reasons for this belief. If we assume that there is nothing specifically injurious in the action of ether, it will rapidly be admitted that, having a definite chemical composition, and not being very liable to adulteration with other fluids it must be an improvement upon the sophisticated alcoholic potations, which, with these people, it has replaced. Again, the affinity of ether for water is so slight (*a*) that dehydration of the mucous tissue of the alimentary canal, and that apeptic action which so well mark the difference between the effect of ardent spirits and of alcohol in the form of unbrandied wine, cannot be evils attending its use.

"All the ether consumed in this way is that which is technically termed 'methylated,' that is, prepared from methylated spirit."

The Quantity Consumed.

"Now, if we assume the ordinary quantity taken at one time to average three drachms, and this quantity to be (in stimulant effect) the equivalent of half a glass of whiskey, we arrive at the result that three gallons of ether supply the place of 10 gallons of whiskey. It is very difficult to arrive at any accurate idea of the extent to which ether is consumed in the north of Ireland. Omagh is said to take about 400 Winchester quarts (equal to 250 gallons) yearly, and one Dublin manufacturer has sent to Belfast at the rate of 4,000 gallons yearly."

The consumption of ether in repeated doses appears, therefore, to have had no specially prejudicial effect on the health; while it acts as as intoxicant more rapidly than spirits, it is more evanescent. We may conclude from the experience of the ether-drinkers of the north of Ireland that the vapour may be freely used, and the anæsthetic influence unhesitatingly invoked without having any permanent or deleterious effect, although the system may have been as it were saturated, as it doubtless, is by

(*a*) 1,000 volumes of ether dissolves but 10 volumes of water.

the ether tippler who imbibes his two or three teaspoonfuls perhaps six times in one day—an amount more than sufficient to exercise full insensibility by the mere inhalation of its vapour.

It has been stated that etherization is more tedious than chloroform in its action. I find this by no means the case. When the time occupied in gradually bringing a patient under the influence of chloroform, and in proportioning the amount of the chloroform inhalation to the varying conditions of the pulse and system, are both taken into account, I do not think there will be found much, if any difference in time, when the aggregate of cases is taken; but even if an additional few minutes were consumed (which I do not admit) the *safety* of etherization will amply counterbalance any inconvenience on that score.

It is to be remembered, that with regard to this question of time, there is a diversity of opinion, and as I have already mentioned, practitioners of eminence and experience (*a*) assert, that, "anæsthesia may be induced by means of ether as quickly as can safely be done by means of chloroform." Much evidently would depend on the mode of administration; the aid given by the patient, and the purity of the ether. I have seen instances where these conditions were attended to, and where etherization was more rapidly induced, even in *half* the time which had been occupied in the administration of chloroform on previous occasions, to the same patients.

The solution of the question of time, appears to be in a great measure dependent on the amount of ether vapour which is taken by the patient. In the directions given for etherization it is stated, that some use the sponge or the cone of paper, and it is remarked "that enough air gains admission through the interstices of the (*b*) sponge moistened with ether held over the mouth and nose;" while others arrange the apparatus so as to prevent "the slightest admixture of air" (*c*) as does Professor Porta, of Pavia, "who stops the nostrils and uses a bladder closely fitted to the mouth" (*c*).

Dr. Smith, of New York, uses a large india-rubber ball, with an aperture cut for the face. The ball is lined with lint, which receives the ether.

Dr. Lente uses a cone of paper, with a towel pinned inside, and so folded as to prevent any, "even the slightest admixture of air."

While, therefore, we find it stated that "the admission of air is comparatively of little consequence," that "enough air enters through the interstices of the sponge," and, again, that it is endeavoured "to prevent any, even the slightest admixture of

(*a*) Dr. Lente, Dr. Squibb, Dr. Godon.
(*b*) Dr. Lente.
(*c*) Asshurst, p. 77.

air," evidently there is abundant proof of the *safety* of ether, and of the efficiency of its action. Some of the objections which have been urged against its use, of causing delay, sickness of stomach, headache, or spasm, are dependent on this very diversity of application, as it is found by those surgeons who exclude air that the results are satisfactory in the extreme.

We have here the key of the question. Ether vapour being considerably heavier than air, when applied by the sponge would flow away unseen from the mouth and nose, and much of it thus escape inhalation, while from being concentrated, and more efficiently applied by the other modes last described, it would act more satisfactorily and produce anæsthesia "as quickly as can safely be done by means of chloroform." (*b*).

(*To be Continued.*)

MEDICAL INTELLIGENCE.

(General Orders by the Governor in Council.)

28th September 1872.

No. 236 of 1872.—The following extract from a Military despatch from the Right Honorable the Secretary of State for India, is published :—

Para. 1. The following candidates having completed the course of instruction at the Army Medical School, and having been reported qualified, have been appointed Assistant Surgeons on the Madras Establishment, their commissions as such bearing date 30th March 1872, viz. :—

Arthur Mudge Branfoot.	George Frederick Bevan.
Christopher John McNally, M.D.	Christopher Lloyd, M.D.
	Andrew Francis Dobson, M.B.
William John Butler.	Charles Little, M.D.
William Edward Johnson, M.D.	Thomas Mayne.
Thomas Vaughan Aylen.	John Crofton Lawrenson.
Stanley Locker Dobie.	

2. If accommodation be available, they will be provided with passages on board one of Her Majesty's troop ships.

3. They will be allowed to count as service for full-pay pension the period of their residence at Netley, from the 30th March 1872 to the 3rd August inclusive.

(General Orders by the Commander-in-Chief.)

Canteens.

27th September 1872.

The following General Orders by His Excellency the Commander-in-Chief in India, is republished :—

His Excellency the Commander-in-Chief is pleased to lay down the following rules for the Canteens of Convalescent Depots, as an experimental measure, in substitution of those published in General Orders* Nos. 42 and 220 of 1871 :—

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* Madras G. O. C. C. 26th June 1871, page 185, and 9th December 1871 page 367.

I. Until further orders, the issue of spirits in Convalescent Depot Canteens is prohibited, so soon as the supply now in store is exhausted.

II. The amount of malt liquor to be allowed to a convalescent will in future be determined by the Medical Officer in charge.

III. A report from the Senior Medical Officer on the result of this change will be submitted to Army Head Quarters, by the Commandant of each Depot, at the end of the present year.

Hospital Furniture.

No. 1002 of 1872.—ADDENDUM.—In the scale of hospital equipment for European regimental hospitals, published in G. G. O. No. 830* of 22nd September 1871, under the head of "Hospital Furniture," after "Chisel" add *Clocks, American—one for each regimental hospital.*

Order Books to be corrected accordingly.

Furlough Rules—Warrant Officers.

No. 84.

2nd October 1872.

The Commander-in-Chief requests the attention of Heads of Corps and Departments to which Warrant Officers are attached to para. 2 of G. G. O., No. 888, dated 23rd August 1872, re-published in G. O. G., No. 212, dated 31st August 1872, page 164, which requires Warrant Officers to elect the Furlough Rules they desire to abide by, and His Excellency directs that all applications for leave for Warrant Officers holding that rank on this date shall be supported by a statement showing the Furlough Rules they have elected.

Leave—Passages.

No. 182.

11*th October* 1872.

Under instructions from Government, the Commander-in-Chief is pleased to notify that officers returning to India from leave to Europe, who take their passages by private steamers, or steamers not under contract to Government, do so at their own risk in respect to forfeiture of pay, service, or appointment, should they fail to arrive on or before the expiration of their furlough.

* Madras G. O. G., No. 241, dated 6th October 1871.

Railways—Passage—Transport.

No. 195.

With reference to the General Orders cited in the margin, it is notified for general information that *a return passage* by railway is authorized for all native commissioned and non-commissioned officers, soldiers and native doctors, who may have proceeded to their homes on leave on medical certificate.

G. O. 136 of 1868, Madras G. O. G. 24th April 1868.

G. O. 286 of 1868, Vide G. O. G. 22nd September 1868.

2. Para. 168, Transport Regulations, Part II., will accordingly read as follows :—

"The indulgence of a free conveyance, with return passage, is allowed to all native commissioned officers and soldiers of the native army, as well as to native doctors attached to corps, when travelling from station to station by railway on medical certificate, whether in the presidency to which they may belong or beyond its limits : a free passage by rail is also allowed to any of the above grades who may be invalided or discharged with gratuity as physically unfit for further service, when such mode of conveyance is available on their homeward routes."

MADRAS MEDICAL FUND.

Retirement.

Surgeon Major H. T. W, Harper, from 8th August 1872.

FORT ST. GEORGE, }
1st November, 1872. }

List of Children.

On account of whom Payments have been notified by the receipt of Paymaster's Statements, &c., from 1st October up to this date for securing the following rates of pension.

Names of Subscribers.	Children's date of birth.	Sex.	Rates of Pension secured.	To what period.	Payments how made.
E. E. Lloyd ...	29th August 1872.	Male ...	Full ...	To 18 years ...	By Donation.
T. Lowe ...	14th Sept. 1872 ...	Male ...	Full ...	To 18 years ...	By Donation and Subscription.

MEDICAL FUND OFFICE,
FORT ST. GEORGE,
31*st October* 1872.

CORRESPONDENCE.

A new Medical Fund.

To the Editor of the Madras Medical Journal.

Sir,—Will you kindly find a place for the following in your next issue.

In your last month's number I read with a great deal of interest, a very good letter from "Junior." Any one who has read the same, will, I am sure, agree with me, that we have remained quiet too long, and that it is high time, as he shows us, that we should be "up and doing." What is to be done will have to be done by ourselves, and if our endeavours have a successful issue, we shall be able to claim the credit. When I think of the time that has been wasted, of the six years that have been allowed to pass away without our making a struggle, I feel that we have been guilty of a great want of energy, and have thereby renderde what we want more difficult to get. But better late than never. With "Junior's" letter before us as a stimulus, let us at once ask for that which ought to have been given us as our right. What we want is a fund, and why we have not one, is a question that must be answered by the powers that be. We may rest assured that the way to get a fund is not to sit down quietly and wait until one comes, but to commence at once and see what we can do for ourselves. Some time since there was a talk of a combined fund for the Staff Corps, Medical and Clerical professions; it was talked of, and written about, but there the matter ended. Probably it is under consideration now, but we all know that subjects like these are eggs which require a very long incubation before they produce anything; so that after the stereotyped delay, usual in these cases, of three or four years, there is just a bare possibility of our hearing something about it; and even then, perhaps, nothing very much to our advantage. There is one point, that we must bear in mind, and that is, we must work collectively and not individually. Our present Inspector-General we all know is ready and willing to help us; so that if we unite together with one spirit, work with one end, and ask our right with one voice, we cannot fail to obtain what would be the greatest boon to our service.

ANOTHER JUNIOR.

Water Analysis.

To the Editor of the Madras Medical Journal.

Sir,—When I first took upon myself to make a stand against the sensational hygienic chemistry which threatens to overwhelm sanitary science in India, I was fully aware that such a course would bring down on me no small amount of opposition, even of obloquy. Every one who attacks an abuse must expect vigorous resistance not unmixed with indignation. I am not, therefore, surprised to find myself charged with doing my best to injure the professional reputation of a brother medical officer. I need hardly say that such is not the fact. Nothing has ever been said by me impugning the professional reputation of Dr. Macnamara; but when he steps out of his profession to compile bad chemical schemes, I do not hesitate to speak in defence of chemistry either at home or in India.

But I own to some surprise when I find Dr. Macnamara slips out of the position he took in the following sentences of his reply. "I, for my part, am quite content that the scheme, or Mr. Nicholson's critique, should stand or fall by the truth, or otherwise, of the particular statement which he pronounces 'a gross inaccuracy,' and I shall proceed to show that this statement is in fact quite correct * * * * But if the alkaline sulphates are present in only small amount, this conversion may be more conveniently brought about by the addition of chloride of ammonium to the solution, for on evaporation and subsequent ignition, the ammonium carries off the sulphuric acid, leaving the chlorine in combination as chloride of sodium or of potassium. But Mr. Nicholson utterly denies this statement. He pours scorn upon it, and states that any one can convince himself by a simple experiment that it is an erroneous one."

In my *rejoinder* I showed that the statement was "a gross inaccuracy," for in the residue from which all the sulphuric acid should have been expelled, this constituent can actually be determined more accurately than in the original water. I gave experiments on a water and on pure salts. but Dr. Macnamara slips out of his position on the pretext of a slight correction which I made in my comment, in order that it should be perfectly accurate, the correction having no bearing on the general tenor of my objection. I protest against this evasion of the penalty to which Dr. Macnamara

offered to submit in case his statement was found to be otherwise than the truth.

I will now briefly notice a few statements made in Dr. Macnamara's letter.

1*st*—"And in the first place I can assure him that I have not been unmindful of marine impregnation as a source of impurity in the fort waters—this he will see if he will refer to my reports on the tanks on the glacis in which I have distinctly recognized the liability to such impregnation."

I have most carefully examined the reports, yet the only trace I can find of such recognition is in the case of a tank at Barrackpore (not at Fort William). "It is possible that this tank may communicate through the soil with the river." But I was speaking, not of more or less direct admixture of tidal water, but of brackishness derived from marine deposits in the soil. All through Dr. Macnamara's reports there is not the slightest recognition of the fact that large tracts of land, even hundreds of miles from the sea, contain deposits of marine salts and impregnate the subsoil water with them. This saline impurity when obvious is invariably ascribed by Dr. Macnamara to the innate depravity of the native character (his *locum tenens* elegantly remarks of Allyghur water, nearly identical with that of the Seven Wells, drunk for years by the troops in Fort St. George, "the curse of Rabshakeh has fallen on the consumers of this water").

2*nd*.—Dr. Macnamara then proceeds to say that I have deliberately misrepresented him by saying that he condemns every Indian water that happens to have nitric acid in it, and he gives what are, apparently, good proofs of my statement being too sweeping. A little attention will, however, show that the quotations, far from being Dr. Macnamara's own opinions, are compilations of the analyst's opinions, and that the exceptions only happen when, an analyst having proved that nitrates exist normally in the soil, Dr. Macnamara has been unable to avoid passing as good, waters which he would, I maintain, have certainly condemned if he could have done so without offending the analyst. For instance, at Nowgong the European Infantry wells escape owing to the analyst's representation that nitrates are normal to the soil of the cantonment, but the Native Infantry wells are made the scapegoats and are condemned; "the analysis undoubtedly indicates sewage pollution." The only difference between the water of the E. I. wells and that of the N. I. wells being that the latter contained a little more sodium chloride

whilst in both cases the amounts of organic matter and of nitric acid and the general composition were nearly identical.

Again, at Jubbulpore, well No. 118, Dr. Macnamara takes credit for praising a water as very good although it contained nitric acid. Now this well is thus remarked on by the analyst: "it contains very drinkable soft water," and the analysis shows that the mineral solids amount to only 5·5 grs. per gallon, of which 4·54 grs. are accounted for without reckoning nitrates or sulphates; I can fully imagine that Dr. Macnamara could hardly avoid perceiving that there was not much room left for nitric acid, and that it would be too ridiculous to condemn a well water which is, with one single exception, the purest in all Bengal. In all the cases brought forwardby Dr. Macnamara, I fail to find one in which he has, of his own movement, passed as good a water containing nitric acid in any quantity above that vaguely known as 'traces;' his opinion is that "nitric acid has been well called fossil organic matter, but it is a fossil which may be of very recent formation." I adhere to all I have said, and deny having misrepresented Dr. Macnamara in any way.

I am, &c.,

EDWARD NICHOLSON.

CUTTACK,
19*th October* 1872.

TO CORRESPONDENTS.

Surgeon W. STEWART, 2-21st Fusiliers.—*In our next.*
Assistant Surgeon L. C. NANNEY. „
The Inspector General I. M. D.—*Received with thanks.*

BOOKS, &c., RECEIVED.

The Doctor, *September* 1*st.*
Medical Record, *August* 15*th*, *September* 1*st.*
Medical Press and Circular, *September* 11*th*, 18*th*, 25*th.*
Journal des Connaissances Médicales, *September* 15*th.*

The Secretaries ROYAL MEDICAL BENEVOLENT FUND SOCIETY OF IRELAND, *acknowledge with many thanks receipt of the following Donation and Subscriptions.*

F. M. L. Hodder, Esq., M.B.	...	...	Donation Rs. 10
W. J. Fawcett, Esq., M.B.	...	...	1872-73. „ 10
J. F. Fitzpatrick, Esq.,	...	...	„ „ 10

THE MADRAS

MONTHLY JOURNAL

OF

MEDICAL SCIENCE.

No. XXXVI.—DECEMBER, 1872.

ORIGINAL ESSAYS.

ART. XXV.—*Some important points in the Treatment, Nursing and Management of patients suffering from Hepatic Disease.* By Surgeon W. STEWART, M. D., H. M.'s 21st Fusiliers.

SINCE the commencement of the Chloride of Ammonium treatment of hepatic diseases as advocated by me in the columns of this journal, numerous cases of hepatitis and of hepatic abscess have been published in illustration. I propose in this place giving a few cases of simple enlargement of the liver, so as to illustrate the special action of the medicine —the subject of my last paper.

In cases of congestion of the liver (simple enlargement) the *special* action is most marked. In cirrhosis on the contrary, and the chronic enlargement of the liver, so often met with in those who have resided long in India, the special symptoms of the drug are but slightly manifested, if at all; and this remark, I think, will be found to apply more particularly to cirrhosis.†

* Madras Journal of Medical Science for February and March 1872.

† I have had but little experience in the use of the drug in cirrhosis; but in the case of a female suffering from the disease, much comfort was afforded, and the fatal progress was apparently prolonged under the use of the medicine.

As this communication will probably be the last I may have an opportunity of making on this subject, as my Battalion is about to leave this country for England, I may be permitted to state generally the result of the treatment in the hospital of the 2-21st Fusiliers. It is now a little more than three years since the treatment was first commenced, and during that period the Chloride of Ammonium has been employed in the treatment of 153 cases of hepatic disease, as under :—

Hospital, 2-21st Fusiliers.

Disease.	Admitted.	Discharged.	Died.
Simple enlargement of the Liver ...	33	33	.....
Hepatitis ...	104	104	.....
Abscess of the Liver ...	16	16	.....
Total ...	153	153	None.

The average annual number of deaths at head-quarters from abscess of the liver during the four preceding years (1865-68) was 6·75, the average annual number of hepatic cases for the same period being 59. Having shown the result of the treatment by Chloride of Ammonium, as compared with that formerly adopted in the hospital under my charge, I have now to point out what I conceive to be the chief reason why an equal measure of success has not been obtained in the practice of others : and first I would take leave to remark that from communications received from medical officers of my acquaintance serving at different stations throughout India, and from conversations with some of my friends who are in the habit of using the Chloride of Ammonium, it is quite evident that one of the essentials to success, viz.—*absolute rest in bed in the recumbent postuer, during the whole course of the disease,* is either entirely neglected or else not strictly enforced. In my pamphlet and other published papers, I dwelt as I thought fully and explicitly on this point, as one, without attention to which

all our efforts would be hopeless; and I pointed out the immediate danger to life from allowing weakly patients suffering from hepatic abscess to quit their beds, to sit up in chairs, go to the night stool, &c.

Since then, several instances have come to my knowledge of patients suffering from abscess of the liver who have met their death in this manner, either while sitting in the chair or on the night stool; or else, the fatal result has been brought about, if less suddenly, yet quite as certainly, from rupture of the abscess into the peritoneal cavity from the same cause, and in this latter case the circumstance is apt to be overlooked and not enquired into, unless the patient should think of mentioning it by alluding to something having "cracked" or "given way" in his side, while sitting up, moving about, or while on the night stool, &c.

But even in fatal cases in which the Chloride of Ammonium had been used without attention to this important rule, (a rule which I hold to be absolutely necessary for success), and in which the treatment had been commenced in time to admit of the probability of success being obtained, it has been observed by those who have communicated with me on the subject, that the progress to the fatal issue was smoothed and prolonged by the long-continued use of the Chloride of Ammonium, and the *post-mortem* examination of such cases has revealed the liver tissue surrounding the abscess cavity in a healthy state, of natural colour and consistence, free from congestion or other morbid appearance, and unlike that commonly found surrounding the cavities of hepatic abscesses.

With regard to the important rule of absolute rest in bed, the greatest difficulty will be experienced in getting all concerned to carry it out effectually; and nothing but unremitting care and attention on the part of the prescriber, and the medical subordinates and orderlies in charge of the patient, will suffice to effect it; for, as a rule, patients suffering from hepatitis or the graver forms of hepatic disease, are peevish and wayward, and in this, as in matters of diet, &c., the greatest difficulty is experienced in their management.

In serious cases I am in the habit of having *two* men daily from the ranks to take it turn about (every two hours) to remain with the patient; and written instructions are read to these men when coming on duty by the Hospital Serjeant, in which, the necessity of preventing the patient quitting his bed, or even moving suddenly in it for any

purpose whatever, is enforced. The patient is not even permitted to quit his bed for the purpose of changing sheets or having the bed made; but when such changes are necessary, another cot is provided, with clean bedding, &c., on which he is gently moved in the horizontal position by the attendant, a bed-pan and urinal being kept *constantly at hand* for his use.

In all my remarks on the treatment of hepatitis and hepatic abscess hitherto made, I have taken it for granted that—with all the confused difficulties at times surrounding the diagnosis—the latter has been made sufficiently early to justify a reasonable prospect of success from the treatment; but that the further element for success is oftentimes wanting, every one who has had much Indian experience will be free to admit. In the Departmental blue book for 1869, there is a very instructive paper by Dr. Adams, on the mistakes liable to be made in the diagnosis of hepatic disease, which is well worth careful perusal. Some time ago two cases, exemplifying the liability to error in the early and remediable stage of hepatic disease, came to my knowledge. Both occurred in the persons of natives, and in both, the patients were supposed to be suffering from Intermittent fever. One, whom I was asked to see in consultation, had been ill for about a month before the true nature of the disease was suspected. He was then suffering from hectic fever, and the liver formed a tumor occupying the greater part of the right side of the chest and abdomen, extending into the left hypochondrium. Chloride of Ammonium was now prescribed with the necessary precautions, but without the slightest hope of its doing more than palliating the patient's sufferings.

Death took place in two or three days afterwards, and the *post-mortem* examination revealed the existence of an enormous abscess, of which the containing cysts and compressed liver tissue were only about two lines in thickness. Suppurative hepatitis is rare in natives compared with Europeans, and there is on that account in them a greater chance of the disease being overlooked. The fact is, that in the treatment of tropical diseases of whatever kind, it is just as necessary, if we wish to avoid errors, to make frequent and searching examinations of the hepatic region as to feel the pulse, or look at the patient's tongue.

That the readers of this Journal may be placed in full possession of all the points in the treatment which I deem

necessary for success, and by which success is attainable, I believe, even in the most serious cases, if the disease be promptly diagnosed, I will conclude these remarks with the following summary of the treatment from a paper of mine published in the *Indian Medical Gazette* for August and September 1872.

Recapitulation of the Treatment of Hepatic Disease with Chloride of Ammonium.

Primary Acute Hepatitis.—In the early stage, should there be no accompanying diarrhœa, a mild purgative may be administered at the commencement, with a view of clearing out the *primæ viæ*. If there be diarrhœa, the patient passing frequent, loose, and bilious motions, a pill composed of mercury pill grs. ii., Dover's powder grs. iii., repeated every two hours till four or five have been taken, will be found the most effectual means of checking it without the risk of setting up gastro-intestinal irritation. Afterwards, saline diaphoretics and diuretics, in frequently repeated small doses, should be administered till their action is well established. I have found a mixture containing liquor ammoniæ acet. ʒii., with tinct. hyoscyam. ♏ v. in each dose, administered every half hour or hour, to give most relief, inducing free action of the skin, allaying the feverish symptoms and calming the nervous system; and the administration of from ʒss. to ʒi. of tinct. hyoscyam. at bed time, after the repeated small doses during the day, will often have the effect of inducing a little refreshing sleep—a point of great importance in this disease. Fomentations or bran poultices applied to the seat of pain in the right hypochondrium will afford much relief, and should be continued as long as they relieve the pain, and repeated from time to time on its recurrence. In some instances the application of six or eight leeches to the chief seat of pain, when this is severe and attended with much tenderness, and the patient is not reduced, may be necessitated; but in general even this amount of local depletion is not required.

The diet should at this time consist of arrowroot, sago, milk, and water; barley water may be taken freely (as a drink, to assist the operation of the diaphoretic), and afterwards beef tea may be allowed.

As soon as the symptoms, local and general, shall have abated, and diaphoresis been freely established by the above

means, the chloride of ammonium should be commenced in doses of grs. xx. twice or thrice daily, and persistently administered till its characteristic and special action be no longer manifested. On the cessation of its sensible action, should liver enlargement, with feeling of stiffness, weight, or other uneasiness continue, it may be administered in small doses (v. to x. grs.), thrice daily, for some time afterwards with beneficial results.

During the whole of this time the patient should be kept in bed, for it must be borne in mind that the condition of an inflamed liver is not unlike that of an inflamed joint, demanding strict quiescence in the recumbent posture; and therefore a steady and intelligent attendant should constantly wait on the patient in all acute and severe cases, and the bed-pan and urinal should at all times be at hand, so that the patient may not have the least occasion to quit his bed. It must also be borne in mind, as pointed out by Morehead, that the *complete restoration* of the inflamed portion or portions of the liver is not coincident with the cessation of febrile symptoms, and local sense of pain and symptoms referable to the affected part; in fact, recovery must be considered incomplete till several days have elapsed from the cessation of the pain and febrile disturbance, during which time the patient should still be confined to his bed and carefully watched, so as to guard against relapse. By these means, in the majority of cases, a speedy and effectual cure by resolution will be effected.

Treatment of Abscess of the Liver.—In military practice, it frequently happens that hepatitis does not come under treatment till the peculiar symptoms pointing to abscess, either impending or already formed, are manifested; or it may occasionally happen that in consequence of bad diathesis, advanced stage, or other cause, recovery by resolution does not take place under treatment, suppuration occurs, and hepatic abscess is formed. It is necessary to detect this event promptly, because it calls for a line of treatment different from that of the antecedent stage. The diet should consist of light puddings, broths or animal jellies, and wine may be cautiously administered, if it does not excite the pulse or produce irritation of the gastro-intestinal surfaces; but no *solid food should be allowed.*

If the hectic fever arising in this stage of the disease be attended with colliquative sweating, the chloride of ammonium should be commenced, at once, in doses of grs. xx.

twice or thrice daily, and persistently administered till it no longer produces sensible action, and all symptoms of hectic have disappeared; and during convalescence and when hepatic pain and uneasiness have completely subsided, it may be given in smaller doses for some time longer. Should the irritative or hectic fever be attended with a *hot* and *dry* state of the skin, the preliminary treatment recommended in the early stage of acute hepatitis should be had recourse to—the diaphoretic mixture with hyoscyamus; and to relieve the local pain, fomentations or hot bran should be applied to the affected part. A moist state of the skin having been induced, no time should be lost in commencing the administration of the chloride of ammonium as before directed.

In simple acute hepatitis, rest in bed and strict quiescence in the recumbent posture is absolutely necessary for the perfect and speedy recovery of the patient; but when abscess of the liver has resulted, the patient who is permitted to leave his bed, or even move about in bed, is exposed to a greater danger than the mere recrudescence of inflammatory action, which inevitably results from inattention to this important rule. He runs the risk of rupturing the wall of the abscess (which may be making its way by one of the usual channels) before adhesive inflammation has taken place between the opposite surfaces of the peritoneum—an occurrence which would inevitably lead to a fatal result.

Treatment of simple enlargement of Liver.—In simple enlargement of the liver, the chloride may be given in doses of from grs. xv. to grs. xx. twice or thrice daily, according to circumstances, with careful attention to diet and rest in the recumbent position; and it is to be carefully noted, that, in whatever form of hepatic disease the medicine is administered, it should not be given while the skin is hot and dry: indeed, in all cases it is better that it be preceded for a day or more, according to circumstances, by some simple saline diaphoretic (the liquor ammon. acet. mixture above-mentioned); or if the skin be very hot with high fever, temperature perhaps 103° to 104°, a sixteenth of a grain of ant. tart. may be given every three or four hours with the same intention.

Chronic Hepatitis.—Cases of chronic hepatitis with enlargement of liver, from long residence in India and repeated attacks of acute hepatitis, are benefited, and the liver enlargement reduced in a remarkable manner, by the adminis-

tration of chloride of ammonium in doses of grs. x. to grs. xx. twice or thrice daily according to the general principles already laid down, varied, of course, according to circumstances in individual cases.

Case of simple enlargement of the Liver treated with Chloride of Ammonium.

Private O'D ——— was admitted at Thayetmyo on the 24th June 1871 complaining of pain in the situation of the twelfth rib of right side and inability to lie on the left side, on account of a dragging pain in right hypochondrium experienced in that posture. The latter symptoms had been present for a week or more previous to admission. No pyrexia; pulse and respiration normal. On inspection a prominence of the right side of chest extending from the angle of the ninth rib downwards was apparent. The liver was enlarged, hepatic dulness extending in the right mammary line about an inch beneath the costal cartilages. In the epigastrium the area of hepatic dulness was also increased. The right side of the chest, at the level of the ensiform cartilage, measured eighteen inches and one-eighth; the left sixteen inches and three quarters, being a difference of one inch and three-eighths, or two inches and three-eighths more than normal, the patient being left-handed. The patient is much emaciated, and his muscular development is poor, but the left arm over the biceps is one-eighth of an inch larger than the right.

Bran fomentations were ordered to the seat of pain in the side and a podophyllin pill as the bowels were confined. As there was no pyrexia the Chloride of Ammonium was commenced on the following day (25th) in twenty grain doses thrice daily.

June 26th.—The medicine acted characteristically in relieving the pain, and inducing perspiration with the usual special symptoms; he can now lie on the left side without uneasiness, and pressure can be borne over the 12th rib, where before there was pain and tenderness. The prominence at the posterior part of bone of right thorax is almost gone. Cont. the Amm. Chl.; Beef tea diet; one pint of beef tea extra.

June 28th.—Pain and uneasiness completely gone. Ammon. Chl. grs. v. thrice daily.

July 1*st.*—Doing well; continue medicine. Low pudding diet.

July 3*rd.*—Omit the Chloride; and to have Quassia and Iron mixture as he is anæmic; diet as before.

July 5*th.*—Discharged; to attend hospital a few days.

Case of simple enlargement of the Liver, illustrating some of the more unusual special symptoms produced by the Chloride of Ammonium in Hepatic disease.

Lance Corporal J. R.——, a stout, plethoric man, of fairly temperate habits, was admitted to hospital on the 23rd September 1871, complaining of fulness and sense of distension in the epigastrium, and pain and uneasiness about half an hour after taking food. During his service in various parts of India and Burmah has had nine admissions to hospital with dysentery; three, hepatitis; three hæmorrhoids; and several times with dyspepsia. For three months or so previous to admission suffered from dyspepsia, morning sickness and vomiting, and used frequently to vomit his food after taking meals; complained also of sensation of "smothering" when lying on his left side—the easiest position being on the back. Skin cool; pulse quiet.

On examination considerable fulness is perceptible in the epigastric region, where there is also tenderness on pressure and increased area of hepatic dulness. Was ordered twenty grains of Chloride of Ammonium twice daily. Beef tea diet; one pint of milk and one pint of corn flour.

September 24*th.*—States that from two to three minutes after the dose of the medicine yesterday evening a sensation of "two cold narrow streaks" started off right and left from the tip of the ensiform cartilage, and coursed along the margins of the false ribs on either side, until they reached a point about an inch outside of lines let fall from the nipples. Thence "the cold streaks" extended down the thighs in the central line as far as the centre of each patella. The sensation of cold moved along about as quickly as a painter would draw his brush in graining; and when the knees were reached, the legs beyond became hot and broke out in perspiration, which thence extended all over the body; the perspiration was profuse and lasted about an hour. After this, the sensation of weight and suffocation, which formerly pre-

vented his lying on his left side, was greatly relieved. Continue treatment and diet.

25*th.*—Yesterday, two minutes after taking the morning dose, "a cold streak" (this time single and of greater breadth) spread over the left side of the abdomen as far down as the pubis and afterwards all over the abdomen. The perspiration which followed was not so great as before. Could now lie on left side with ease; but was cautioned against doing so. Continue medicine and diet.

26*th.*—The medicine yesterday was only followed by a sensation of cold, this time stopping just half way between the umbilicus and pubis.

27*th.*—Medicine has now no sensible effect; enlargement in epigastric region gone. Ammon. Chlor. grs. viii. thrice daily.

29*th.*—Discharged well.

Case of Simple enlargement of the Liver treated with Chloride of Ammonium.

Private J. M.—— was admitted into the Regimental Hospital, Thayetmyo, on the 16th September 1871, complaining of pain in the right hypochondrium, where there was also tenderness on pressure. Patient was slightly feverish, probably the result of intemperance. For the previous four or five days had a "stitch" in the right side, which was first felt on parade on bringing his rifle to "the shoulder." Accompanying this was a sympathetic pain in the right shoulder. Two days afterwards the pain, which was at first but slight in the right shoulder, became more severe, as well as that in the right side, and he suffered from headache and alternate flushes of heat and cold; when he turned on the left side, a sensation of weight and dragging was experienced in the right hypochondrium. The area of hepatic dulness was slightly increased, and there was some tenderness on pressure beneath the margins of the right costal cartilages. To have diaphoretic mixture with Tinct. Hyoscyamus every two hours.

17*th September.*—No pyrexia, felt a few stabbing pains in the side this morning. The skin being moist and prepared for the action of the Chloride, to have grains xx. Chloride of Ammonium morning and evening and to observe its effects. Beef tea diet.

18*th.*—Patient states, that about a quarter of an hour after taking the medicine yesterday, he felt a curious sensa-

tion as if the drug were working from one side of the chest to the opposite (one hypochondrium to the other across the epigastrium) ; he compares it to the sensation of water running across. Then immediately beneath the right false ribs in the right mammary line, a sensation as if pins and needles were going in and out at that point. This was accompanied by a pulling downwards at the same point which lasted from eight to ten minutes (the sensation of picking remaining for a part of that time), and when the latter ceased, the stabbing pain which the patient formerly experienced was entirely removed. While all this was going on (during the ten minutes above alluded to) towards the outer edge of the right rectus abdominis immediately beneath the costal arch, a pulsation as if of a working out and in of a muscle went on ; but he had not the curiosity to feel the part to ascertain if the movement was communicated to the surface. Cont. treatment.

19*th.*—Pain of side and sense of weight much relieved and there is less tenderness on pressure. Sensible action of the medicine not so marked ; a sensation of pricking and heat in the right hypochondrium is only experienced, lasting for about ten minutes after the exhibition of the dose, followed by warmth and perspiration over the entire surface. Continue diet and treatment.

22*nd.*—Sensible action of medicine has ceased and with it pain and uneasiness of side. Patient can now lie on left side without discomfort. Chloride of Ammonium grains xv. twice daily. Beef tea diet one pint. Beef tea and one pint milk as extra.

28*th.*—On the 26th as the patient had a slight febrile paroxysm of malarial origin owing to the cessation of the rains and the fall of the river, he was ordered Quinine grains two daily and the Chloride of Ammonium was omitted. Since then the fever has not returned, and patient is permitted to sit up for the first time. Half diet.

30*th.*—Discharged.

Case of simple enlargement of the Liver complicated with Bronchitis, treated with Chloride of Ammonium.

Private R. A——— was admitted to the Regimental Hospital, Thayetmyo, on the 19th September 1871, complaining of pain in chest and cough, attended with slight

pyrexia. Diaphoretic mixture with small doses of Tinct. Hyoscyamus was prescribed.

On the 20th the chest symptoms being troublesome the treatment was continued. An examination of the hepatic region, however, disclosed the liver to be slightly enlarged, and on interrogating the patient, the symptoms expressive of hepatic congestion were elicited. He had lost appetite and had a sensation of weight and dragging in the right hypochondrium, where there was tenderness on pressure. As the diaphoretic prescribed had induced free action of the skin, and as the chest symptoms were probably depending in great part on the pressure exercised by the enlargement upwards of the right lobe of the liver, the patient was ordered grains xx. of Chloride of Ammonium, and to observe its effects from the moment of taking the dose.

September 21*st.*—Patient states that about half an hour after taking the dose yesterday evening, he felt the medicine "searching about" from the upper third of the sternum to within three inches of the umbilicus in the median line. When the "working" had lasted about a quarter of an hour, a sensation of pricking was experienced at the ensiform cartilage, thence along the inferior margins of right costal cartilages to a point about an inch on the inner side of right mammary line. The sensation experienced was as if a succession of shocks were going backwards and forwards between the above points. At the same time he began to perspire and experienced a sensation of warmth and comfort. Continue the chloride morning and evening and to have a dose of cough mixture at noon. Tea diet: two pints of milk and one pint of beef tea.

22*nd.*—Hepatic pain and uneasiness much relieved, chest symptoms less troublesome. Continue the Chloride of Ammonium.

23*rd.*—*Special* effect of the medicine no longer experienced, but each dose is still followed by perspiration and feeling of comfort.

24*th.*—Doing well. Chloride of Ammonium grs. xv. twice daily, diet as before.

26*th.*—Countenance clear and bright, hepatic pain and uneasiness quite gone. Respiratory movements natural. Continue treatment.

30*th.*—Discharged.

Art. XXVI.—*Fever, its theory and treatment.* By Assistant Surgeon L. C. Nanney, H. M.'s 3rd Regiment, P.L.I., Secunderabad.

The pathology of fever has, throughout all ages, been a subject of much discussion amongst scientific men, but little advance seems to have been made in elucidating the obscure causes of this disease.

There are two methods by which scientific discovery may be carried on, the Theoretic and the Practical; the former ingenious, brilliant, and seductive, but dangerous, unless controlled by the latter, which consists of series of careful observations and experiments. In too many cases the theory is not deduced from observation, but first arbitrarily formed, and facts too frequently misrepresented to support it.

The result has been, in many instances, that various ingenious theories, after holding ground but for a short period, have eventually proved fallacious, and have been superseded by others no less transitory in their duration; until, in our theories of Fever, for example, dissatisfied with all modern hypothesis, we return to those of Hippocrates and Galen.

The theory of the former, as revived and revised by Liebig, has become the most popular theory of the day, nor are the views of Galen now considered obsolete.

Valuable as theory may be, in indicating a safe track towards the detection of efficient causes, in guiding us in our choice of things to be observed, and as a frame-work which binds together the mass of various experiments and observations; still, it is on these latter that we must depend for the accuracy and reality of our knowledge; nor must we hesitate to abandon the theory, so soon as it ceases to be fully borne out by the facts, elucidated during the course of the investigation. While but few are capable of starting an able theory, all may aid by so amassing and arranging facts as to afford ample material for the formation of satisfactory conclusions.

Dr. Holland observes, in his Medical notes and reflections, "a very especial advantage has been the application of numerical methods and averages to the history of disease; thereby giving it the same progress and certainty which belong to statistical enquiry on other subjects. Averages may, in some sort, be termed the Mathematics of Medical Science. Through Medical statistics lies the most secure path into the philosophy of Medicine."

In reference to which passage Sir John Herschel remarks, as follows ;—" The comparison of multitude with multitude, the destruction of errors by mutual collision, and the slow emergence of truth from the conflict by its outstanding vitality, belong to a maturer age of science than that in which medicine had its origin or attained its present importance."

In the arrangement of the facts amassed during the course of our observations, we cannot do better than bear in mind the five ways, mentioned by Herschel, in which facts may be rendered, by the unskilful employment of them, even " more fallacious than theories."

" 1. By ' having preconcevied ideas of the final result.'

" 2. By ' neglecting the numbers which contradict the result they wish to obtain.'

" 3. By ' incompletely enumerating causes, and only attributing to one cause what belongs to a concourse or many."

" 4. By ' comparing elements which are not comparable.

" 5. By ' singling out the extreme partial results which tell on the side to be defended and ignoring all the rest.'"

The theory of Hippocrates, as revised by Liebig, supposes, that a septic poison, of animal or vegetable origin, or both, is taken into the blood, producing changes in the whole mass of the blood, and propagating itself by, what he terms, *a quasi* fermentative process, and then, after a somewhat, definite period of incubation or latent period of contagion during which these changes are occurring, fever is set up as an eliminative action, the various eruptions and critical discharges being also purely eliminatory.

Taking then this theory as a guide in the direction of our observations, let us consider how far our own experience tends to confirm or confute it.

In some cases of endemic fever, local causes have been assigned to which a great appearance of probability attaches itself, as in the case of marshy ground, or the vicinity of dense jungle, where the unhealthiness of the situation is self evident ; but where various causes combine to produce the peculiar condition favorable to the development of this disease, it is more difficult to detect its true origin.

In such cases careful observation alone, and comparison of facts with the results of the investigations of others, and the study of the history of corresponding epidemics, where the local causes were analagous, may guide us in forming an opinion, and ultimately lead to the unravelling of the mystery.

In a case where several agencies are, with apparently equal probability, pointed out as the cause of fever, circumstances might lead us to direct our attention to one special agents which we should suppose to exert a more powerful influence than the rest; and also to be increasing in importance, if we observed that the type of the disease, which had been for years endemic at certain seasons, appeared to be changing in character, assuming a more severe form, thus indicating the prominence of the more powerful amongst the causes formerly assigned. Thus in the year 1870 the fever endemic during the rainy season in the Native Infantry Lines, situated to the south of the station of Secunderabad, is described as a mild intermittent, characterized by the absence of symptoms indicating a malarial origin, and seldom requiring the use of quinine. In 1871 the same type of fever prevailed to a very large extent, this at the time appeared attributable to the fact of the Regiment (3rd L. I., the 4th N. I. having occupied the Lines in 1870) having newly arrived in Secunderabad, after long tours of service in stations such as Cannanore, Tonghoo, and Madras, and being consequently in an enfeebled condition, unacclimatized, and susceptible to the slightest influences. In the present year (1872) the fever has again made its appearance, but not, as might have been expected, to a less extent, nor has a year's acclimatization had any effect in diminishing its force. On the contrary the numbers have excessively augmented, from 170 the maximum of 1871, to 257, and although resembling it in some of its features at the onset, it has assumed a severer form, being somewhat remittent in character and attended more frequently by complications of dysentery, diarrhœa and paralysis, and speedily followed by greater depression and nervous exhaustion, than was observed in the cases generally treated last year. This fact appears to negative the presumption that the increased rate of fever in 1871 was due wholly to the unacclimatized condition of the men. Had such been the case, it might have been expected that the fever rate would have diminished yearly, as the men become more habituated to the climate; this actually occurred in the 4th Regiment, in which the rate of sickness decreased in regular ratio.

1866	1,128
1867	740
1868	679
1869	327
1870	214

Fever also attacked some of the officers who had not suffered in the previous year, and one and all stated that it left them in a weaker and more debilitated condition than any previous fever which they had experienced. One in particular, who had spent three years in Shwegyeen, complained of even greater exhaustion in this case, and I observed that patients presented a very anæmic and asthenic appearance. As far as I can judge, after careful inquiry and investigation, the causes of sickness seem to operate most powerfully in these and the adjoining Cavalry Lines, which would apparently indicate the unhealthy source to proceed from this quarter. I have noticed that when heavy rain falls in these Lines, it usually gathers up in the direction in which the city of Hyderabad lies, and that when very wet here, it is frequently fair in other parts of the cantonment, and *vice versâ*, the rain-fall being unequally diffused through the station. Also, that dense fogs rise from the same quarter and advance steadily in this direction, filling the hollows in the undulating ground on which the Lines are built, and enveloping the whole vicinity in masses of oppressive vapour, doubtless a sufficient vehicle for the transmission of any malaria with which it may meet in its onward progress. On referring to Dr. Maclean's able article on Fevers in Reynold's Medicine, Volume I, page 73, I find the following passage;—

"From the malarial quarters of that densely populated and most unsanitary city (Hyderabad in the Deccan) I used to receive into the Residency Hospital, during the autumnal months, a number of cases of this kind, presenting from the first, signs of great depression, the fever after the second or third exacerbation becoming almost continued, the skin being yellowish . . . . . the pulse exceeding 120, small and compressible . . . . . respiration, quick and sometimes irregular, the abdomen distended, the bowels loose, and a disposition to hæmorrhage from nose, mouth, and bowels and, almost invariably, delirium, with a tendency to coma. Such cases, unless energetically treated, hasten rapidly to a fatal termination by exhaustion and coma."

I have found that the symptoms here noted agree more closely with those which have come under my observation this season than any described by other authors, whom I have consulted on the same subject.

I am indebted to the Residency Surgeon, Dr. Wyndowe, for the information that, although there is not an unusual amount of fever this year at Hyderabad, its type is more

remittent, and it is more commonly complicated with liver affections than is usual in that city, and also, in many instances, there is a typhoid tendency. These considerations incline me to the opinion that the fever prevalent this season in the Regiment under my charge, cannot be wholly ascribed to the effects of damp and wet, or to the sudden changes of temperature. These are excessive, and operate powerfully as the exciting causes in the present instance. Whether they may sufficiently account for the fevers of former seasons is beside the purpose of the present enquiry, but I am of opinion that in this case they cannot be assigned a more important position than that of secondary causes, and that the root of the disease must be traced to a deeper source. As I shall proceed to show, the symptoms indicate the absorption of a certain degree of malaria, and the treatment which I have found most efficacious points, by an inverse process, to a septic poison, for the presence of which the effects of damp and cold cannot sufficiently account.

Imbued with this belief I was strongly impressed with the idea that antiseptic remedies would prove most beneficial. I had previously given quinine in most of the cases, and was surprised to find that in a good many instances it failed to have the desired effect. There is also one great drawback in the use of quinine where cases of fever are numerous and protracted, viz., the costliness of the drug, and the difficulty of procuring it in quantities sufficient to meet the demand, which renders it very desirable that a less expensive and more easily obtainable remedy should be substituted. I had formerly tried the Alkaloids, Quinidine, Cinchonine and Cinchonidine, but was not satisfied with the results. I employed Arsenic, but, in the present instance, without benefit. I therefore commenced the administration of Carbolic Acid in those cases in which Quinine seemed to exert no influence, and finding it to succeed, even beyond my expectations, I placed a number of newly admitted cases under the same treatment from the onset, keeping a careful record of them as compared with those treated by Quinine.

I shall, next month, forward the statistics thus obtained, and some of the most important cases in full, merely remarking at present, that I found in most of the cases that after a few doses of Carbolic Acid the symptoms and general

appearance ameliorated, the pulse increased in fulness and strength, the tongue became remarkably clean, and the dry unpleasant taste in the mouth disappeared, the eyes looked brighter, and the whole aspect changed for the better. When Carbolic Acid can be substituted for Quinine, the following advantages are to be gained, the taste is sweet and rather pleasant, causing no subsequent nausea or vomiting, no derangement of the digestive system, nor the unpleasant sensation of singing in the ears and deafness, usually experienced after large doses of Quinine. It produces profuse diaphoresis, acting freely on the skin, showing that it is a powerful eliminator. It can also be given during a paroxysm, hastening on the sweating stage, and shortening the duration of the attack.

Before bringing this subject to a close I may note that several of the most important causes to which malaria has been ascribed, exist, to a certain extent, in these Lines. The subsoil consists of granite, in a crumbling disintegrated condition, the surface soil being composed chiefly of the debris of the larger rocks, in which are embedded huge boulders of a more highly crystallized granite, which being covered in patches of deep purple, grey and yellow, with a minute lichen, cannot fail to give out deleterious matter; the water in the wells percolating through this soil must also be more or less contaminated.

I visited the four wells by which the Lines are supplied, and, judging from their situation and appearance, it is probable that a certain amount of deleterious matter may be washed down during the rains, thereby impregnating the water with a considerable amount of impurity. The natives themselves do not consider the water good, and name it as one of the causes of their sickness.

I forwarded samples from each of the wells to the Analyst of Potable Waters, but owing to his absence the analysis must be made on a future occasion. Should the results prove of interest I shall communicate them. In addition to these local unfavorable features, these Lines are, from their situation, exposed, as I before remarked, to all noxious influences brought up by the prevailing winds, or carried by dense fogs or currents of air, being wholly unprotected by trees or belts of trees, which might serve to intercept them.

(To be concluded.)

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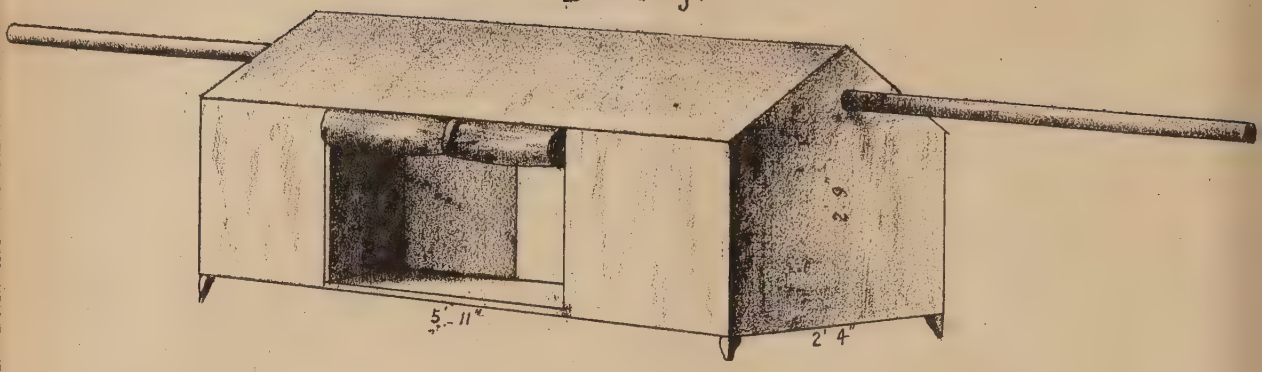

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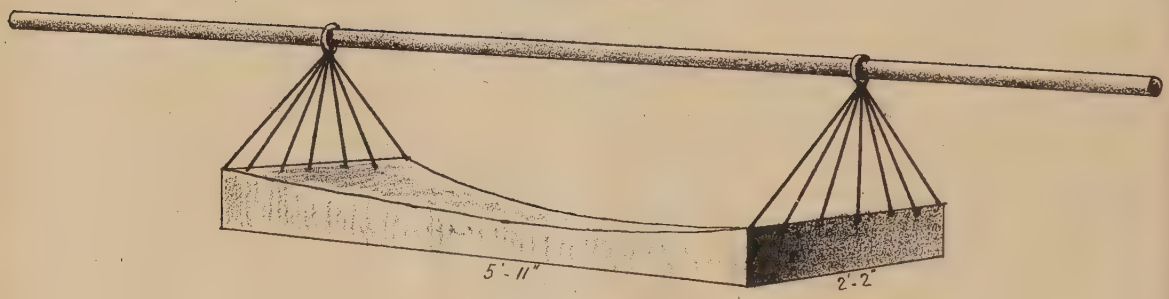
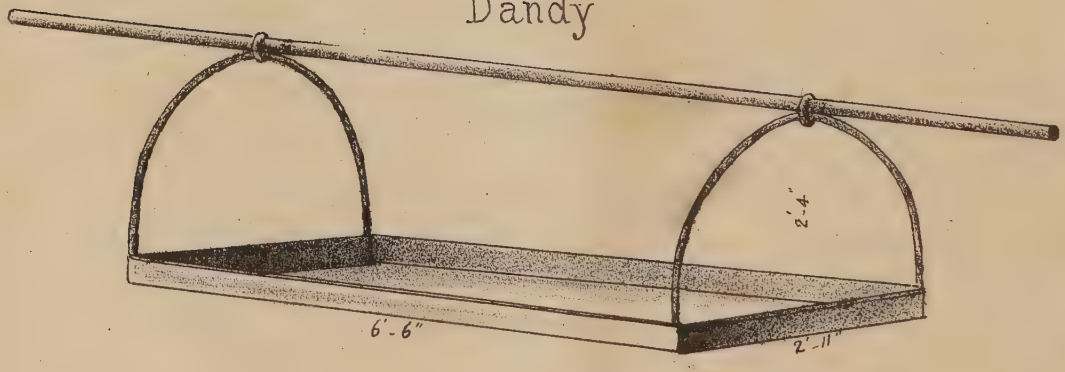
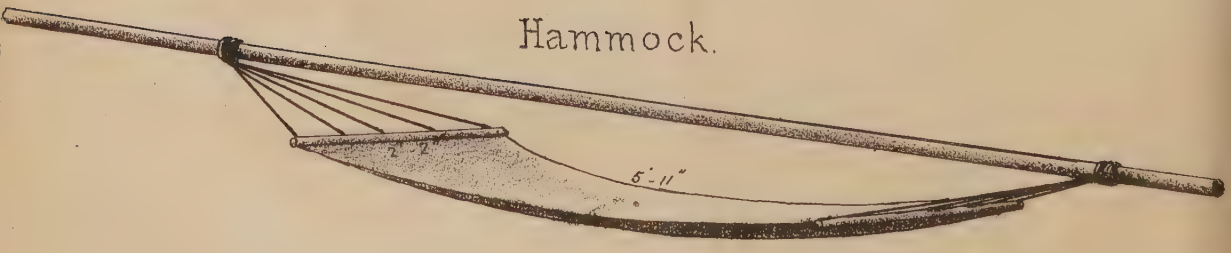


Dandy



Hammock.



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ART. XXVII.—*Extract from the "Record of the Expedition to Abyssinia."*

(*Communicated by the Inspector-General I. M. D.*)

SICK CARRIAGE.

Dhoolies.—"The dhooly is very much used in India for the carriage of the sick. It weighs 123 lbs. It is a description of cot made of teak with cane bottom and short legs suspended from a bamboo pole by a light iron frame-work which is covered with waterproof canvas.

"It is carried usually in India by six bearers. Its great weight and bulk, however, render it unfit for service in a hilly country.

"During the passage of the Bashilo and Jidha rivers, it was found that twelve bearers could not carry a dhooly at a greater rate of speed than one inch an hour, and along the steep ascents and descents the army has had to travel, dhoolies constantly *delayed the baggage animals.*

"Dhoolies might be improved if constructed entirely of light iron work instead of heavy teak. They need not be made so high, or of such great breadth as at present, and their legs should not exceed from two to three inches in length. Over a level country, the dhooly is an admirable means of sick carriage.

Ambulances.—"The ambulances brought to Africa were constructed to be drawn by bullocks; they are heavy and unfit for draught except on made roads; they were very little used in the campaign, only between Kumayli and Zula.

"Light ambulances drawn by mules, similar to those used by the American and Prussian armies, might have been of some service on the roads between Zula and Adigrat.

Dandies.—"The dandy consists of a light wooden frame-work with a cane bottom with two pieces of iron at either end supporting the bamboo pole. It weighs 54 lbs., has nearly all the advantages of a dhooly, and its portability renders it more suitable over bad roads in a hilly country. A temporary cover can be made by fastening a blanket across the pole.

Swing Cots.—"A few swing cots purchased from the shipping in Annesley Bay were used by the Force. A swing cot is simply a frame-work of light wood covered with canvas, the whole being supported by a bamboo pole and weighing altogether 45 lbs.

"Swing cots were found to be well adapted for carrying men suffering from slight ailments or injuries, but uncomfortable for patients when placed on the ground (especially in wet weather) as it is occasionally necessary to rest the bearers on the line of march. They have the advantage, however, of being light, and require only four bearers each.

Hammocks.—" Several of McGuire's field hammocks were sent with the force ; these, lashed on bamboos, were used for the conveyance of sick on the line of march. They weigh with pole only 24 lbs. each.

" They proved very useful for carrying men falling out on the line of march from fatigue or temporary ailments ; but they were not found to be adapted for wounded men or for patients suffering from serious illness; they might, however, be easily made a most confortable means of carrying men suffering from any complaint, and owing to their lightness, portability and other advantages, they would then doubtless be the best description of sick carriage for such a country as that we have just marched through.

" The field hammock had the same disadvantage as the swing cot, in that it could not be placed on the ground in wet weather (this defect might, however, perhaps be remedied by using the staves as supports). If made longer and wider and fitted inside with a light wooden frame, so as to prevent the patient from being doubled up (which he is very liable now to be, unless poles are specially fitted) the field hammock would be a better means of conveyance for sick ; and forming as it does a sleeping hammock for men when encamped, and thus keeping them clear of damp ground and conducing to their health and comfort, it would appear highly desirable that some means should be taken to improve the McGuire field hammock to render it a more perfect means of conveyance for sick men."

Art. XXVIII.—*Deaths from Dengue.*

(Communicated by the Sanitary Commissioner, Madras.)

The Inspector-General, Indian Medical Department, has been good enough at my suggestion to obtain the experience of medical officers serving in the Presidency division, of Dengue viewed as a cause of death. In July and August last the district registrars in the town of Madras returned numerous deaths as due to " Dengue" while the public

hospitals and other institutions, although showing numerous admissions, gave no return of fatal cases.

It seemed, therefore, desirable to collect the experience of medical officers serving in the Presidency Division on this point, and the accompanying papers show that although "Dengue" under proper treatment is not often fatal, yet that it has been in some instances undoubtedly a cause of death, either immediate or remote.

The history of the epidemic and its progress over this part of India, will be noticed in my annual report for 1872, and I content myself on this occasion with furnishing for publication, the following facts in regard to the fatality of the disease.

(Signed) W. CORNISH, F.R.C.S.
Sanitary Commissioner, Madras.

Surgeon-Major W. J. VANSOMEREN, M. D., *Surgeon, 1st District,* remarks as follows:—"I have not had a single fatal case of Dengue in my hospital, nor yet amongst my patients out of hospital. The only instance in which it appeared to me that the disease may have occasioned death, was that of an old man, in the 87th year of his age, who was unconscious when I first visited him, within about 18 hours of his attack, and who was stated to have had pains all over his body, accompanied with fever; he was feverish when I saw him, but he never became conscious and sank in about 24 hours. I think there is reason to doubt if his case was one of Dengue.

I have treated a large number of cases of all ages from infancy to old age, they have all recovered with the (doubtful) exception referred to above."

Assistant-Surgeon W. MACRAE, M. B., *Surgeon, 2nd District,* states:—"In the Military Female Orphan Asylum, there were 100 cases. They were all very similar, more or less, fever for two or three days with head pain and with or without pains in the joints, a period of weakness with want of appetite for a few more days, and then recovery. The treatment in all was very simple; generally a laxative on admission and then a diaphoretic mixture. A measly eruption was seen more or less extensively in half the cases.

At the Vepery Hospital 235 cases were treated. There

was only one death in the case of a boy 9 years old. He was seized at night, brought to Hospital next forenoon, and died a few minutes after admission. His temperature on admission was above 107° Fah. Seven children brought to hospital with convulsions and very high temperature in all cases above 105°, were immediately treated by cold baths. One little girl æt. 10 months, an E. I. with temperature 106° was kept immersed in water at the ordinary temperature for 1½ hours with great benefit. Three persons aged 4,6 and 9 years respectively, suffered from tetanic rigidity of the muscles of the body generally, after a few days fever. In a good many women the menstrual flow came on with great violence immediately after being seized with dengue, though it was not due for one or two or even three weeks. I have had no deaths in my private practice, though one infant at 6 months was despaired of for sometime. The cold bath, however, brought down the temperature and relieved the symptoms.

The Vepery Hospital apothecary saw one strong well made native man æt. 30 die on the 3rd day in delirium with very high temperature. He was not under his treatment. He saw several children in convulsions from the disease and treated them all with the cold bath: all recovered."

Surgeon W. FRY, *Surgeon, 3rd District,* writes:—"That no deaths from "Dengue" have come under his notice in the 3rd District."

Surgeon-Major C. M. DUFF, M. D., *Surgeon, 4th District* remarks:—"No casualty from "Dengue" has occurred among those persons who received treatment as in- or out-patients of this hospital."

Surgeon JAS. KEESS, M. D., *Fort Surgeon,* writes:—"No deaths from Dengue occurred in my medical charge. I was called to see two infants both of whom died of this disease. One from convulsion and the other from exhaustion."

Surgeon-Major G. SMITH, M. D., *Physician, General Hospital,* writes as follows:—"I have the honor to report that from the 30th April 1872, the day on which the first admission from Dengue took place up to the 31st of October inclusive, 926 cases of that disease have been received into hospital, of which, at the latter date, 25 remained under treatment.

2. The total number of deaths recorded in 901 cases treated, amounts to 4 or 0·44 per cent.

3. I append a short abstract of the fatal cases.

(*a.*) A. Gaynor (E. I.), admitted into hospital 6th March 1871, died 12th September 1872. A case of chronic tubercular degeneration of the left lung. At the time when he was attacked with dengue he was in a very feeble and exhausted condition with prospect of an early fatal termination to his case. The fatal result was somewhat hastened by the intercurrence of Dengue.

(*b.*) Appoo, a native lad æt. 8 years, was admitted into hospital on the 4th and died on the 5th October 1872. The case was one of Dengue ushered in by severe fever, vertigo, headache and convulsions; when admitted he was insensible, a second fit of convulsion proved fatal. He was 21 hours under treatment.

(*c.*) J. Smith, (E.) was admitted on the 23rd August with an attack of Dengue which lasted from the 23rd to the 28th of August inclusive; on the 29th and 30th he was free from fever. He had slight fever on the 31st followed by an intermission of five days; on the 6th September he had slight fever with an intermission of five days; on the 11th he had fever followed by an intermission of 6 days; fever supervened on the 20th followed by five days intermission; on the 26th fever recurred followed by two days' defervescence; on the 29th fever set in with much difficulty of breathing which gradually became more distressing until his death on the 6th of October. The post-mortem revealed the cause of death to have been acute tuberculosis. The patient was a man of delicate strumous constitution.

(*d.*) J. D. King (E. I.), admitted to hospital on the 3rd of October, died on the 8th idem. When admitted he was in a comatose condition with all the symptoms of apoplexy. Repeated attacks of convulsions supervened. Sensibility partly returned and his condition appeared to be improving when he was attacked with Dengue on the evening of October 7th, a minute papular measly eruption appeared and his pulse rose from 96 to 112. The eruption was very erythematous, and appeared principally on the face, chest and hands. It was quite characteristic of Dengue. Convulsions followed and he expired the same night. No examination of the body was permitted.

4. There is also at present a case in hospital, the future progress of which causes me some anxiety. In this case Dengue attacked a patient suffering from a mild attack

of enteric fever, and the subsequent progress of the disease has acted seriously upon the strength of the patient.

5. These cases seem to indicate that although Dengue "pur et simple" may be an affection which but slightly imperils life, yet, that it is one which may lead to the development of latent tendencies to disease, and further, that its depressing effects upon the heart and nervous system may prove disastrous when, as an intercurrent attack, it complicates the course of any serious malady from which the patient may be suffering."

Surgeon W. N. CHIPPERFIELD, *Superintendent, Eye-Infirmary*, states as follows:—"I have attended, since February last, 212 Europeans and 362 natives with dengue, namely 117 Europeans and 309 natives, in-patients of the General Hospital; one European and 13 natives, in-patients of the Eye-Infirmary; and 94 Europeans and 40 natives in private practice, and hitherto I have not met with a fatal case. Several European and East Indian children of ages varying from 3 months to 6 years, suffered severely from the disease with remarkable prostration of the nervous system. Some of these were attacked with convulsions, but I am happy to say no casualty occurred. The younger patients up to 16 years of age, as a rule, suffered but very little from the pains, stiffness and lameness which are so common sequelæ of the disease in adults; but in this class of patients troublesome diarrhœa is a very common complication. My experience is that, in the greater number of instances, natives suffer much less than Europeans.

Senior Apothecary Turnbull informed me that in his practice a Eurasian lad of 8 or 9 years died of dengue; he was suddenly seized with convulsions, followed by frothing at the mouth with the ejection of a mass of partly coagulated blood. Chinniah Naidoo, contractor for civil Hospitals, also informed me that three children died of the disease in his house, the fatal event in each case being preceded by loud screams and sudden vomiting of blood."

Surgeon R. W. COCKERILL, *Superintendent, Lying-in-Hospital*, writes:—"I have had no deaths from Dengue among adults, but two children aged 5 and 13 months respectively while suffering from dengue were attacked by convulsions and died in this hospital. Both were very ill on arrival and died shortly afterwards. In my private practice every case has recovered."

Surgeon W. FRY, *in Medical Charge H. M's Penitentiary,* states :—"There have been no deaths from Dengue in the Penitentiary Hospital."

Surgeon J. M. JOSEPH, M. D., *Surgeon, Body Guard,* writes :—"I have the honor to report that no case of Dengue has terminated fatally in the hospital of the Body Guard or in my practice, although a very large number of cases have come under my observation and treatment, both in and out of hospital."

Assistant Surgeon S. B. HUNT, *7th Regt. Native Infantry,* remarks as follows :—"The only deaths which I can in any way attribute to Dengue are the following :—

The first case was a recruit boy, aged eight years, who was brought to the hospital suffering from high fever and insensible. He was admitted in the evening and died the next morning. He never recovered consciousness, and he had a severe convulsion (the only one) about 15 minutes before his death. This case occurred last July. The second case occurred in my private practice in the person of a female aged nine months, the child of Indo-Briton parents. The child was attacked with fever followed by convulsions which increased in frequency and terminated fatally in about forty-eight hours from the commencement of the illness. I have seen no deaths from this disease in adults."

Assistant Surgeon R. V. POWER, M. D., *13th Regiment, M. N. I.,* writes :—"Within my experience I have not known of a single death from Dengue."

Surgeon J. M. JOSEPH, M. D., *17th Regiment, N. I.,* writes :—"No case of Dengue has terminated fatally in the Hospital, 17th Regiment, N. I., or in my practice, although a very large number of cases have come under my observation and treatment both in and out of Hospital."

Surgeon T. G. HOWELL, *37th Regt., Grenadiers,* writes :—"No deaths from Dengue have taken place in the 37th Regt., Grenadiers."

Surgeon A. H. BEAMAN, *in Medical Charge, E. A. V. Company, Palaveram,* states :—"During the last 3 or 4 months about 422 cases of Dengue have come under the observation of myself and Assistant Apothecary Hawkes of the E. A. V. Company at this station ; men, women and children of all ages were attacked by it. No deaths occurred, nor do I believe that "Dengue" *per se* is ever a fatal

disease. It is just possible that the convulsions, with which the disease is almost always ushered in when children are attacked, might on rare occasions prove fatal, but I do not consider it possible."

Surgeon D. KEARNEY, *in charge of the Details at Saint Thomas' Mount,* submits the following return of the cases of Dengue that came under his treatment; no deaths occurred among them.

	Admitted.	Discharged.
Men	... 90	90
Women	... 133	133
Children	... 205	205
	428	428

Assistant Surgeon W. S. FOX, *Vellore,* writes:—"Only one case of death from Dengue came under my own observation, a European child aged 3 years, and this was more the result of want of proper care and attention, both parents being perfectly helpless themselves from the disease. The child while suffering from a severe attack was left to the sole care of a cooly, and I fear very much neglected. With both parents the type was very severe; one especially took a typhoid form with buboes in the axillæ. When in charge of the 28th Regiment lately, I had reason to believe that some few cases of deaths in the families reported to me as fever were from Dengue, but as they did not come under my own observation or that of my subordinate, I cannot speak with certainty; in any case there could only have been a few, and probably want of proper care and nourishment would account for most if not all."

Surgeon J. WILKINS, M. D., *in charge of the Detail Hospital, Vellore,* submits the following number of cases of Dengue that came under his treatment:—

	Admitted.	Discharged.
In-patients	... 497	497
Out do.	... 428	428

"Remarks—Many cases of Dengue that occurred in the Lines have not come under treatment. No record of any case having proved fatal."

ART. XXIX.—*Case of reported death from Dengue. By First Class Hospital Assistant,* C. SITHUMBRUM PILLAY, No. 456, Raj Hospital, Tanjore.

On the 16th November 1872, a Brahmin named Rajandrum Pundit, happened to mention to me that his brother Sivasawmy Pundit, had died of Dengue that day in Tanjore Fort. Being aware that the Sanitary Commissioner and others had reported dengue to be a non-fatal disease so far as adults were concerned, I thought it desirable to have the history of the case carefully investigated, and accordingly I brought Rajandrum Pundit to Hospital, and obtained from him the following history of his brother's illness, in the Zillah Surgeon's presence :—

Sivasawmy Pundit, Brahmin, aged 55, employed in the palace of Tanjore as a priest, known to me personally as stout, middle-sized and apparently healthy, was attacked with a fever, believed to be dengue, at midnight on 13th November, which increased during the 14th and passed off with profuse sweating about day-break on the 15th. There was, however, some abatement of the fever and some sweating on the evening of the 14th.

While the fever was present he did not sleep, he was not delirious, nor did he vomit nor suffer from diarrhœa. He did not complain of pain in his head, or in his back, or in the nape of his neck; the pain was limited, Rajandrum Pundit stated, to the joints.

On being asked to specify the joints affected, he said that the knees only were painful. The deceased was not able to sit up; he did not complain of thirst.

Early on the 15th he was seized with purging and vomiting. When these symptoms first set in does not appear from his brother's statement, but the wife of the deceased, whom I saw on the 19th informed me that the vomiting preceded the purging.

Both the wife and the brother agree in stating that the vomiting was distinctly of a bilious character, and that it ceased at midnight; the brother's statement, however, was that he vomited 6 or 8 times, while the wife informed me that he vomited 12 times. Both are also agreed that the purging commenced at day-break and ceased at midnight on the 15th, and that the evacuations were about 9 in number;

the last evacuation, passed one hour before his death, both the wife and brother say was dark colored, and that most of the other evacuations were yellow and watery. The wife, however, states that he passed one white evacuation only when the diarrhœa set in, while the brother's statement was that the first two evacuations were white. At first the brother appeared to hold that these light-colored evacuations were like rice water, subsequently he corrected himself and said that they were like slime, and this last was also his sister-in-law's description. Both were agreed that the deceased had no cramps, and that his skin became cold after midnight on the 15th; also that he had a distinct voice, and that he went on talking up to 5 A. M., on the 16th, that is to within about an hour of his death; that he had difficulty of breathing during the night, and that he became insensible an hour before he died. His urine was not suppressed.

The deceased is reported to have enjoyed good health generally, but to have been liable for several years to rheumatic pains which troubled him 3 or 4 times a year, as well as to occasional attacks of asthma, but he had not previously suffered from bowel affection.

On the 13th November he was at the palace as usual on duty and took his morning meal; he did not take his food in the evening because the 13th was the anniversary of his father's death. Until the fever left him, on the morning of the 15th, he was not given any food, according to the well known native practice of withholding food in fever. During the 15th he was given rice and sago congee without milk, 6 or 7 times, but after 10 P. M. no food was given.

In the street in which the deceased lived I counted 35 inhabited houses, and ascertained that there were cases of dengue in almost every house. In the house occupied by the deceased and his family a case of dengue occurred at the end of September, but there had been none other previous to 13th November.

The deceased declined to have any medical attendance, feeling sure that the disease was dengue, and this opinion was shared in by his family and neighbours who, no doubt, had seen many cases of the disease, if they had not actually experienced it in their own persons. Asthmatic symptoms were, however, troublesome on the 14th, and

it is just possible that the pain in the large joints may have been due to rheumatism. The looseness of the bowels, which seems to have caused Sivasawmy Pundit's death, is sometimes considerable in dengue. In a case of an European child attended by the Zillah Surgeon, where the swelling of the joints and the eruption were marked symptoms, dysentery was sufficiently severe to place the child's life in some danger; and I know of another case of undoubted dengue in an adult where profuse diarrhœa existed for 24 hours, but did not much reduce the patient.

The fatal collapse in Sivasawmy Pundit's case might probably have been obviated by sufficient food and judicious treatment.

OURSELVES.

In our last issue for November we stated that it was our intention with the present number of this Journal to bring this publication to a close, for the reasons specified in our Editorial columns. During the past month we have received a few suggestions from some of our contributors and friends which we think, if acted upon, may be the means of extending the circulation of the Journal and be the means of enlisting the interests and help of those who have not hitherto assisted us either by becoming subscribers, or by contributing to its pages. We have, therefore, determined upon conducting the publication of this, the only periodical representing Science in this Presidency, for a further period of six months, as an experiment. We take this opportunity, therefore, of appealing to the members of both Services as well as the members of Apothecary and Hospital Assistant grades to aid us, in the manner alluded to above, in averting the untimely and unnatural death of one of the oldest Medical Journals in India.

MEDICAL EDUCATION OF WOMEN.—II.

In an article which appeared in our impression of October last, we ventured to draw attention to a subject, which is not a little occupying the minds of thinking individuals at home, viz., the advantage of so extending the curriculum of female education as to provide, in keeping with the spirit of the age, for

an honourable and really useful career for that interesting branch of the human family, who, it is to be feared, have been hitherto regarded as fit only for domestic drudges, or as well-dressed living pictures to ornament a Ball-room. We are no visionary believers in, or rampant advocates of, "Women's rights;" but we belong to a practical school, whose creed it is to hold that a woman has a higher destiny to fulfil than merely to bring a child into the world, to mend her husband's socks, or to read sensational novels as her sole occupation in life. We are more particularly interested at present in woman's fitness for acquiring medical knowledge, and her special adaptation for making use of that knowledge, either as a means of livelihood for herself, or of disinterested benevolence to those around her, in whatever position she may be placed. Men, very generally, find their sphere of usefulness, or their lot in life, already settled for them by circumstances over which they individually have but little control. With women the case is different; for beyond the primary duties that fall to each, as daughter, wife, or mother, it much depends on a woman's own inclinations and feelings what work she will undertake, or indeed whether she will undertake any work at all. Except among the actual working classes, where dire necessity enforces labour that provides the sustenance of life, women generally do not work in the sense in which we understand work. In the middle classes most women content themselves with the simple duties of the nursery, or with the task of seeing that the daily table is set out in order, and is amply provided with creature comforts for the good-man's delectation. In the higher classes female life is often still more aimless and profitless; personal comfort, dress, finery, and social amusements being the only objects of thought and ambition. What care such

women for even the natural position designed by the Creator of "help-meet" to man? They live an indolent life of voluptuous ease, or gilded refinement. They actually delegate the most sacred duty of womanhood, the care of their children, to paid governesses and nurses, who, good and faithful as they may be, cannot devote to the infant heart and budding mind the constant and varied ministrations of gentle, thoughtful love with which God in His wisdom has gifted the true mother, alone. It is good, however, for the men of the present generation, and the little ones that will be the fathers of a future generation, that a change is beginning to come over the spirit of the female dream. All women are not alike in their self-seeking, or in their love of indolent ease. To the honour of womanhood be it said that there are many noble exceptions who have no love for this state of moral degradation; and it is now not wonderful to find many women in all classes of life who are sincerely anxious to do all the good they can for their fellow-creatures, and thus glorify the Great Master of the human race. It is among the ranks of such women—and it is to be devoutly hoped that their ranks will ever extend—that we shall find eager candidates for medical knowledge and skill, in view to the after-exercise of such knowledge and skill for the good of mankind.

It must not, however, be forgotten that medical work is too fatiguing, too anxious, to find favour with those who value knowledge for the personal gain it may bring, rather than for the blessings it is calculated to confer on others by its exercise. There must thus of necessity be two or three different standards of medical education for women. The highest standard would not attract many students, in India at least; for by the highest standard, we mean a full course of study, such

as is given in the Medical College to those who intend to make the practice of medicine their profession. At Home there are many women prepared to give up the time, and undergo all the labour and fatigue, necessary to attain this standard. Here, however, we do not think that many women could, or would, avail themselves of the opportunity, even were it conveniently afforded them. But granting that ladies in India have not time and opportunities to go through a complete course of study, we are sure nevertheless that there are many who would thankfully attend classes and lectures on such subjects as Physiology, Hygiene, Midwifery, Diseases of Children, and Minor Surgery, if their attention were invited to the subject, and befitting arrangements made for their presence. In large towns like Madras there is, of course, an ample supply of medical men, and medical men too of high acknowledged skill; so that in such favoured places we never need fear being left to watch in breathless anxiety for the doctor, who, perhaps having a long way to travel, may arrive all too late. But even in Madras it would be of the greatest value, for mothers of families especially, to have some medical knowledge. Sudden accidents often unhappily occur among the inmates of the house or the servants in the compound, and in such cases much may depend on prompt and appropriate action. This applies with all the greater force in the Mofussil, in outlying stations where there is not even a Government Dresser within reasonable distance. Army surgeons are not to be found in every small town of India; and qualified independent practitioners are as rare as the black swan. The Medical men of the service are principally located where there are troops, or are placed in charge of large civil stations and jails. But European ladies in the position of wives of Judges,

Collectors, Officers, Engineers, and Missionaries, are scattered broadcast over India. These have it in their power to do an immense amount of good ; and we cannot but believe that many of these ladies would be most thankful for such an interesting and ennobling employment as bringing the solace of medical aid to the enfeebled or anguished frame. They might also be able to help each other in their families at times ; and while there are so many servants and retainers attached to every large household, there will always be scope for a lady's kind and intelligent ministrations. Many ladies do even now endeavour to attend to their servants and children in minor ailments ; but of course with the best intentions, one cannot do much good while ignorant of the import of symptoms, and equally unacquainted with th epowers of drugs, and the proper administration of even simple remedies.

It is now time, however, to turn our attention to a practical view of the question we have set ourselves. We have endeavoured to assign reasonable grounds for our views on the important subject of female medical education. At all events we feel sure that no one will hesitate to admit that trained and skilled assistance is preferable to the ignorant endeavours of those, who, never having been taught even the rudiments of the art, offer themselves to the public and the profession as nurses and midwives. In this country at least, a great step has been taken in the right direction by the admission of such women as desire it to tuition in the General and Lying-in-Hospitals. We find repeated in every Gazette an official invitation for pupils at one or both of these Institutions, on what must be considered, for the object in view, very liberal terms. Instead of the women having to pay a premium in consideration of the benefit conferred on them, they are offered Rs. 15 a month for Europeans and East

Indians, and Rs. 10 for Natives, volunteering as pupils in the General Hospital, and Rs. 7 a month when they elect to study in the Lying-in-Hospital alone. We cannot but look on this action on the part of Government as most benevolent and beneficial, for, we believe, they are thus conferring a great blessing on the country at large. We have now in Madras a number of well trained and competent women, who earn a very fair income by nursing the sick and attending midwifery cases. These women have already begun to spread themselves, and take up their residence in Mofussil towns. No doubt the supply at present is not equal to the demand; but that by a sort of natural provision is sure to improve as time goes on. Thus we have little doubt that, in a comparatively short time, all the principal Mofussil towns will be as well supplied as Madras now is; and the "up-country" doctor will seldom experience any difficulty in procuring a trustworthy nurse to carry out his wishes and instructions so far as the European and East Indian population is concerned. This is well; but there is a great deal more wanted. What is most urgently required is a diffusion of medical knowledge among the natives of the country. How many men, women, and children die annually from purely preventible causes we do not know; and we suspect it is a question that would puzzle even the Registrar of deaths. It is perfectly impossible that in every tiny hamlet, on the distant slopes of hills, and in districts like Wynaad, Coorg and Ganjam, Government can keep up numberless well ordered hospitals with a duly qualified apothecary and several well instructed dressers, all under the daily supervision of a diplomaed surgeon. Even were it possible thus to bring medical aid to the very doors of the people, we should not have gained our object. The people of the country, very unreasonably no doubt, have a perfect horror of "going to

Hospital." It is difficult to fathom all their crude ideas on the subject; but we find the Brahmin declining to go for the sake of his caste, the Mussulman woman hindered by her gosha scruples, and one and all asserting that these European doctors are really human devils ever ready to burn, cut, probe, or amputate. Time may perhaps enable us to scatter hospitals broad-cast over the land; time may perhaps obliterate, or at least weaken, the vulgar prejudices of the people; but we most emphatically assert it will indeed be a work of time. Meanwhile how can we best help these thousands—aye millions—of people, our fellow subjects and fellow creatures? There is no doubt that where the doctor, the apothecary and the dresser fail to gain admission, a woman, would be gladly welcomed. It is so here in Madras. High caste Brahmin ladies accept most gratefully the aid of our midwives. We do not however think that our European and East Indian nurses are exactly the agents to use in the duty of carrying benevolent aid to the widely scattered many of the country, and that for more than one reason. It is true that a rich native will occasionally pay handsomely for services which have procured the safe and happy advent of the son who is not only heir to his wealth, but whose birth is inexorably necessary to save the father's soul from the torments of "*Put.*" These are however exceptional cases. Up-country especially there are many needing aid who cannot afford to pay much for it; and there are many districts in which a European or East Indian nurse or midwife could not make enough out of her hard work, on which to live in anything like comfort and decency. But where a horse will starve, a sheep or goat may live in luxury: a native woman, with her few and simple wants, will earn enough to keep herself and family in comfort where the European or East Indian, needing animal food, good clothes, and good

shelter, must gradually perish. Another reason for endeavouring to obtain a large supply of trained native women as midwives and as nurses of the sick, is that they would be more welcome among a large proportion of their fellow country people. They should be of all castes, Mussulmanis, Brahmins, Chatryas, Sudras, and Pariahs. Then we should have a chance of giving efficient aid to all. This is the object we have in view—how to attain it is a somewhat difficult task. Some natives do already come to our schools of nursing and midwifery; but their numbers are altogether inadequate to accomplish the great object we seek to effect. Perhaps one consideration that prevents native women from coming forward as pupils is the fear that when they have learnt their profession, it will be nearly useless to them. European ladies prefer the ministrations of their own countrywomen when practicable, and the chances to native women of getting a good practice among their own people are not sufficiently encouraging, to induce them to undertake so much labor and study. Would it not be possible for Government to take those that pass the required examinations with credit into their service, and to attach them, as a temporary measure at least, to the various District, Jail, and Municipal Hospitals on a small monthly salary? They might be made worth their keep by being appointed to wait on, and attend to, the inmates of the female and lying-in wards. They would thus be supported for a time out of the public money, until they established a connexion in the surrounding country, and were thus able to earn enough to support themselves. We have endeavoured to set forth, very feebly and imperfectly we fear, a scheme which may be promoted and made to bear fruit in India for the education of women desirous of medical knowledge and anxious to turn that knowledge to account. If it be practicable to have classes for the instruction of those

ladies who are desirous to learn, and to hold out some slight pecuniary inducement to the native women of the country to study our systems of Midwifery and Nursing, we shall not have written in vain. The gain to the community at large will be great; and the labours and anxieties of the professional man will be certainly lessened, when he knows that the mother, wife, or nurse is capable of understanding and intelligently carrying out his instructions. The foundation of a reasonable system of medicine will be laid among the natives; a good field of industry will be opened to poor women, whether East Indian or European; and the women of the higher classes who study the higher branches of medicine, will reap the reward of their toil in the good they will be able to accomplish, and in the deeper appreciation they will acquire of God's power and wisdom in Creation. We have heard it said, "the undevout astronomer is mad"—mad too must he be who can study all the wonders disclosed in the study of medicine, and not feel an ever-deepening devotion to, and reverence for Him, in wondering awe of whom the Psalmist of old exclaimed—"O Lord how manifold are Thy works; in wisdom hast Thou made them all!"

THE NEW MEDICAL FUND.

We learn with satisfaction and we have much pleasure in bringing to the notice of the junior members of our Service the news received during the past month regarding the establishment of a New Fund, sanctioned by the Secretary of State for India, for the Staff Corps and for the Ecclesiastical and Medical Departments. The percentage to be paid to widows, it is said, will be determined by the Govern-

ment annually, so that a fluctuation in the amount of payments must be anticipated. With this exception, the New Fund, it is reported, will be of advantage to those members of our Local Service who have been involuntarily debarred from a participation in the privileges of the Old Fund. We are glad to observe, however, that the Government is alive to the desirableness, nay, to the necessity of the Fund to the members of a Service who find it no easy matter to reserve something of their small earnings for a rainy day. We conclude by trusting that there will be no delay in opening up the Fund.

REVIEW.

OWING to the delay occasioned by the substitution of simpler forms when the "elaborate tables hitherto annexed to the report were nearly completed," the Annual Report of Civil Dispensaries for 1870, comes before us for review, nearly two years after date.

The Inspector General I. M. D. opens his report by referring to the cyclone which occurred at Vizagapatam on the night of the 4th November 1870, and quotes the following passage from the report of the Civil Surgeon who states that there was a lull in the storm, of 10 minutes' duration between 2 and 3 A.M. of the 5th November, during which interval the following appearance was observed :—"Luminous appearances, like balls of fire, were seen passing through the air from the N. E. to S. W. direction and *vice versâ*, and near the Regimental lines some of the people there, unhoused drummers and their families, saw one of these balls fall and burst upon the road without explosion or sound, throwing out thousands of sulphurous-like sparks, and fortunately without touching any of the inflammable roofs of houses."

During the year 1870, twelve hospitals and dispensaries were in operation in the Presidency town and sixty-four in the Mofussil. The Inspector General comments on the insufficiency of these institutions for the wants of 25 millions of people, and hopes that, under the operation of the Towns' Improvement and Local Fund Acts, the benefits of European Medical Science may be extended to every town, of any importance, in the Presidency. We cordially sympathize with this aspiration, and earnestly hope that the day is not far distant when it may be realized. The beneficent administration of the Government could not be better illustrated than by the establishment all over the country of dispensaries in which the suffering poor may obtain relief, sympathy and care, at the hands of those who have been trained at our local medical schools. We know that the Inspector General has done much to induce the various municipalities to employ well-educated medical men, in whose capacity, training and experience, confidence could be placed in cases of emergency; but we very much regret to

hear that various municipalities have deliberately preferred men who, in our opinion, are totally unfit for medical charges of any kind. Our readers are doubtless aware that the Medical College consists of three departments.

A.—Senior, in which students qualify, by five years' study for the degree of M. B. They pass the F. A. test, prior to entering on their Medical studies.

B.—2nd Departmemt, in which young men qualify for the grade of Assistant Apothecary, by three years' study, after passing an entrance examination, whose requirements are not as high as the matriculation standard.

C.—Junior Department, in which lads qualify for the grade of Hospital Assistants, by two years' study. These pass an entrance examination of a very elementary character.

Class A. has, unfortunately, no outlets. This Department is so poorly represented, that it has little more than a nominal existence. We trust we may be pardoned for expressing a hope that Government may soon see the unwisdom of spending much money in turning out a few highly-finished agents and then setting them aside, with nothing to do. This is part of the educational system of the country.

Class B. makes, on the whole, good medical subordinates. The more intelligent and trustworthy among them are occasionally entrusted with minor medical charges.

Class C. is intended to be Hospital Assistants and nothing more. Their training fits them for little else than routine hospital work, under the eye of a superior.

It is truly a matter of regret that municipalities should, on the score of economy, insist on employing men of Class C, seeing that they are, both by preliminary education and professional training, unfit for the responsibilities of a medical charge. It is clear that municipalities, in selecting medical men for their dispensaries, are influenced solely by considerations of economy, and it is, therefore, not to be wondered at, that they have turned a deaf ear to the judicious advice of those who are desirous of providing them with a better class of practitioners. A man of the Hospital Assistant class would cost about 30 Rs. a month, whereas one who has received a training equal to that of an Apothecary, would cost three times as much. The question of selecting suitable men for the medical charge of Dispensaries to be

opened out under the Local Funds Act is an important one, and deserving of the immediate consideration of Government. This point should be settled, before these institutions pass into the hands of men who are unfitted, by professional training, for such an important trust. As pecuniary considerations stand in the way of a right settlement of the question, perhaps Government might be induced to give a helping hand. By the system of grants-in-aid, Government has shared the cost of education. A similar system, applied to Hospitals and Dispensaries, would probably induce municipalities to engage the services of better qualified men, of men who are competent to act in cases of emergency and to give sound advice in all matters relating to sanitation. Properly trained medical men can be made use of, in so many ways, for the good of the country, that it would be a pity to lose such an opportunity of doing good on a large scale, by the selection of a very inferior order of practitioners, deficient in general as well as professional knowledge and of inferior social position. Surely Medicine and Hygiene have as much claim to the support of Government, as the education which is scattered broadcast over the land, an act of kindness to the masses which has not only not won the hearts of the people, but has helped to excite considerable discontent in the minds of those who have attained to academic honours, with little or no cost to themselves. The help we now solicit for Medicine and Hygiene will, on the contrary, do a vast amount of good and secure the gratitude of the masses. The Madras Medical College is capable of supplying the country with a class of reliable medical men; but its teaching power, we regret to say, is mainly expended in training men for inferior and subordinate positions in the civil and military branches of the service.

After the Inspector General's covering letter, follow extracts from the reports of the various officers who were in charge of Dispensaries during the year. Although these reports show the increasing usefulness of Dispensaries and their growing appreciation by the people, we can collect from them many evidences of the oft-repeated statements that our native fellow subjects are only too ready to avail themselves of the benefits of the European system of medicine; but that they are unwilling to pay for the same, and that natives will subscribe towards a Dispensary, only when the resident European officials set an example.

The Hospital Assistant at Anantapoor says, "I regret to say that, owing to the departure of all the European residents from the station who patronized this charitable institution, the amount of subscriptions has fallen off a great deal, and the civilized native inhabitants of this town have withdrawn their subscriptions, simply because there being no proper stimulus for them to co-operate with their European brethren. I consider that the working of the Dispensary was satisfactory in all other respects, except this important defect."

Surgeon Major Walter says of the Berhampore Dispensary: "Through an appeal made by the Tahsildar, the Zemindar of Kullicot has been induced to pay up his promised subscription, amounting to 200 Rupees, the Zemindar of Chinna Kimedy Rupees 105, and the Zemindar of Jarada Rupees 50; but I am sorry to say the natives generally are lamentably indifferent concerning the welfare of the Institution; only a very few subscribe, and they generally for sums under one rupee; even with the above liberal subscription from the three zemindars, the native share is only thirty-eight per cent. of the whole amount subscribed, against sixty-two from the European gentry who subscribe most liberally."

Surgeon-Major Clementson says of Chingleput:—"This Institution is but poorly supported, so that but few in-patients can be admitted, except those who can feed themselves. The average monthly subscription for the past year has been Rupees 13-6-0. The Collector was good enough to contribute the sum of Rupees 156-4-0, being half of a sum placed at his disposal by the Famine Relief Committee."

With regard to the Dispensary at Gooty, we read: "The subscriptions from the native residents amounted to Rs. 106-14-0, contributed chiefly by several of the Government officials of the different Cutcherries in the place and by a few vakeels. The subscription list does not contain the name of a single merchant or trader in the place, of whom, however, there are but few. Yet it is an undeniable fact, though not directly connected with this subject, yet bearing upon the point, that money, amounting individually to hundreds and even to a *thousand* and upwards, was squandered only a few months back, during the celebration of the Dusserah festival, by some of the wealthy men of the place, for the mere gratification of listening to the rapturous strains of a native *prima donna* brought up expressly

from Madras to Ghooty for the occasion, while the figures in the subscription list individually simply represent units. Moreover, while the sick poor resort to the Dispensary for relief from villages at a distance from Ghooty, it is found that nothing is contributed towards the support of the Institution by the wealthier inhabitants of these villages."

Assistant Surgeon Tyrrell says of the Guntoor Dispensary: "The native subscriptions are very small, and have much diminished during the last two years. This is, no doubt, owing to the increased taxations."

Want of space prevents us from making quotations which shew the indifference of the people to sanitary improvement, and for the same reason, we regret our inability to adduce evidence of the fact that many of our locally trained men are doing good work, both as medical practitioners and sanitarians. If our readers will excuse the peculiar English of the Hospital Assistant at Chellumbrum, we shall quote what he says of the sanitation of the town, in proof of what we have said:—

"The usual sanitary arrangements, as I have always complained, are only made as a temporary measure during the festivals; that over, the town relaxes into its accustomed nuisance and becomes very well adapted to promote epidemics of all kinds. That neither the authorities nor the influential rich towns-people have taken it in their heads to apply for the introduction of a regular Municipality, is a fact that is to be much regretted. On the other hand, they have, as I am led to believe, used their influence in keeping the probability of its introduction as far off as they possibly can. This town is large enough to require district sanitation. There are upwards of 100 streets with no less than 15,000 inhabitants. If this town is not worth having a Municipality, I do not know if Mayaveram, a hamlet in comparison to this, is. They have a ridiculous contrivance for removing filth from some public streets. The inhabitants are compelled to remove their dung hills from the streets to their backyards; there to rot in worms, or to burn them at their very doors, thus to make the vapour to diffuse itself in the atmosphere and be the fruitful source of many infections. This course the Magistrates cannot help but enforce, there being no resource from which the expenses of their conveyance out of town can be defrayed."

MEDICAL MISCELLANY.

(Continued from page 400.*)*

The mode chiefly in use for the administration of Ether has been that mentioned in the latest and in the majority of the works on Surgery from America* ; by using "a thin and hollow sponge, which is large enough to cover the mouth and nose, and which is first wrung out of warm water, and saturated with Ether poured on in quantities of not less than half a fluid ounce; this is laid on, and a cone of pasteboard or light wood superimposed. The first few inhalations should be made when the sponge is a little distance from the face; but as soon as the anæsthetic influence has begun, the sponge may be more closely applied, and need not be removed except when necessary to apply more ether. Of course if, as will sometimes happen, the patient be seized with a fit of coughing, or, from having eaten a meal immediately before the operation, he should begin to reject from the stomach, the sponge must be withdrawn until tranquillity is restored. *If the patient breathe freely he cannot be too rapidly Etherized, and there is no danger as in the case of Chloroform from the vapour being too concentrated.* Enough air is drawn through the interstices of the sponge and the perforation of the cone to obviate any risk from this cause, and rapid Etherization is much less apt to cause pulmonary congestion than slow inhalation of the vapour, prolonged through considerable time."

Such are the general directions given by a surgeon who avows that he prefers Ether.

I select, in contrast, the directions given by a surgeon (Dr. Gross), who prefers Chloroform. He observes as follows :—

Ether.	Chloroform.
During the process of Etherization the patient may sit up with impunity or be recumbent as may suit the convenience of the operator, no injury resulting from even a protracted maintainance of the erect position.	During the process of Chloroformization the patient must lie down, and not only so, but the head and shoulders should be depressed, owing to the *greater* difficulty of maintaining the circulation of the brain through the influence of the heart's action.

* Asshurst.

Ether.	Chloroform.
The admission of air is comparatively of little consequence.	The importance of having an abundance of air during the inhalation of an article so *potent* as Chloroform is self-evident: it is absolutely essential to the safety of the patient.
The inhalation should be commenced with not less than half an ounce, and diligently maintained till full anæsthetic influence is produced, which usually requires a considerably longer period.	The inhalation should be gradually, and not hurriedly, effected, time being allowed to allow the accommodation of the system to its influence, avoiding the shock which might otherwise result to the heart and brain. From six to eight minutes should be spent in producing its full effect.
No special attention need be paid, as the fluid possesses none of the poisonous (!) properties of Chloroform.	The assistant having the charge of the process must give it his earnest and undivided care; and as soon as the inhalation has been fairly entered upon, one of the attendants should sedulously watch the state of the pulse, the respiration, and the countenance.
Effect.	Effect.
At first a short cough is usually provoked. This soon subsides and the system gradually lapses into a *calm, quiet* condition, attended with muscular relaxation, closure of the eyelids, and mental unconsciousness followed in many cases by stertorous breathing.	This may be divided into two stages:—1st. That of excitement, when the patient struggles and cries. The eye has a wild, staring expression, the face is flushed, and pulse preternaturally quick. This varies much in degree and duration. The second stage then ensues, and the individual gradually lapses into unconsciousness. Feeling and intellect are suspended, and if this state be carried further, coma will ensue, and the appearance be apoplectic. As yet all is safe; but a few more whiffs, and an important link in the chain of life may give way, and the patient be sent into eternity.

The writer lays considerable stress on the importance of using caution, and good Chloroform, and ascribes the *good luck* he has so far had in his practice (though he gives one instance of a narrow escape, where artificial respiration was necessary) to the careful observance of these conditions.

On contrasting the comparative merits of the two anæsthetics as described by him, "*good luck*" is not indeed an exaggerated term when applied to the use of an agent so fraught with danger, and when we find such a suggestive expression used by a writer of eminence, it cannot be questioned that Chloroform, with its signal dangers, has claims far inferior to Ether as a pain-destroyer, and that such a resolution as was adopted by the Massachusetts Hospital—"that the exclusive use of Ether should be an absolute law of the Institution"*—was most advantageous for the patients.

MODE OF ADMINISTRATION.

Having referred to the diversity of opinion as to admission and non-admission of air during the process of Etherization, I may state that I adhere to the general correctness of the latter view, and cannot adduce better evidence than the following practical illustration :—

I etherized a medical man, aged about 24, as intelligent and fine a specimen of a vigorous young man in full health as well could be, and who was in agony from toothache. I requested him to notify his sensations as far as possible, and to conduct the administration to himself, as long as he had sense to do so, and to intimate his wants. After the few first inhalations he found it best to desist a little till the throat became somewhat accustomed; he then felt a benumbing soporific influence and called out "more," "more," "delicious," "delightful feel;" he sank into insensibility, the dentist drew the tooth, and he gradually returned to consciousness in a few minutes.

In this muscular young man there was not the slightest spasm, or any unpleasant symptom; there was not the slightest irritability of stomach, and within one hour afterwards he enjoyed a capital dinner. His description from personal observation includes the general rules to be observed—of avoiding irritation at the very commencement, and of then passing on the influence, to the exclusion of air in a great measure; when this is done there is little apprehension of spasm, or sickness, or of delay.

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* Neligan's "Medecines." By MacNamara.

NOTE.—August 9.—I operated on four patients to-day—one was etherized, had two tumours of the leg excised, and was in bed again within ten minutes; another was etherized and had a tumour removed in eight minutes; two others underwent the process in about from six to eight minutes—nothing could possibly have been more satisfactory.

In conducting Etherization the following points should be attended to:—

The patient should not have eaten any meal within three to four hours. A glass of wine, or a cup of tea may perhaps be allowed within two hours of the Etherization, unless in cases where stimulants are urgently necessary. If this simple rule be attended to, the instances will be indeed very exceptional, in which sickness of stomach will occur. In eye operations, it is needless to remark, exact precautions should be taken.

The patient must be freed from any tight clothing, and from stays or strings which might in any way impede full respiration. The recumbent position is best suited, with the head fairly raised on a pillow; lying on the *side* I find better than on the back, but it is matter of no very great importance; patients can also be etherized equally well when sitting, but the relaxation of the muscles supporting the head and body leads to inconveniences, and the recumbent position is certainly preferable in all cases.

The inhaler is then charged with from $1\frac{1}{2}$ to 2 ozs. of pure anhydrous sulphuric ether,* which should be poured in slowly. The mouth-piece is then applied gently over the mouth and nose. The patient may hold it and keep it applied for the first few minutes; this lessens any nervousness about its use, and the mouth piece can be taken away at pleasure so as to moderate the inhalation and accustom the throat to the vapour. The patient should be directed to cough or blow out, and as each such action is followed by a full inspiration; such effort aids the breathing in of the vapour very materially, and I am convinced the more freely and fully the Etherization is pressed till insensibility is attained, the better for the patient. After two or three minutes any irritation will be passed, and the breathing will be carried on regularly. The mouth-piece may be then taken charge of by the administrator, and the patient's hands laid down, the breathing will gradually become full, and the stage of insensibility steadily and equably ensue. This may be pushed, even till stertorous breathing ensues, which need cause no alarm, but as perfect insensibility is attained without it, it is not necessary further to overwhelm the patient.

The administrator will now suit himself to the circumstances of the case: the patient's condition is altogether in his hands, should there be signs of the ethereal influence passing off, he can pour in a little more, and should the contrary appearances arise, he can, by opening the funnel, allow air to be more or less freely admitted into the inhaler, or he can withdraw the mouthpiece temporarily.

The mouthpiece being usually made of elastic tubing should

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* That prepared from methylated spirit, of 720 sp. gr., answers well.

be pressed firmly on the face, or be slightly moulded to the nose if required; it is well after the few first inhalations, to apply it equally and closely, thus Etherization will be attained more rapidly and satisfactorily.

It is best to preserve silence, and not encourage the patient to speak.

If attention be directed to the flexible diaphragm of the inhaler, its motion serves as an index, and an estimate can be always formed as to the condition of the respiration, and how far the patient from timidity or otherwise, is not fully respiring, or the administrator is imperfectly applying the mouthpiece and allowing the escape of the vapour.

Should it so happen that the stomach be sick, and any food have been recently taken, the head should be turned on the side, and the chin slightly depressed, to favour the expulsion of the food.

The ascertained ratio of only one accident been known to occur in 23,204 cases of Ether inhalations, puts the probability of any complication beyond notice.

The operation over, the patient may be allowed to recover gradually, and if the face be sponged with cold water, and the patient soothed when emerging from the influence it will be best.

The time occupied in producing insensibility by the inhaler varies a little, and some patients seem to resist somewhat more than others. I have seen very many thoroughly insensible in four minutes—others in five; but if eight minutes be taken as an average, it will be found that few cases indeed will exceed it, while the vast majority will fall short of it. *I refer to cases where the Inhaler is used*, as I have comparatively tested the cone and sponge with it, and find that not only is the time much longer, but the effects are far less satisfactory, both as to the temporary and after condition of the patient with the cone and sponge; or, in other words, where a free exposure to the vapour is not effected.

I must here remark that the convulsive stage produced by Chloroform inhalation is not seen where Etherization is used by the Inhaler, save in *very* rare instances; nor is sickness of stomach usual, if the simple precaution be taken of not allowing any meal to be given within a few hours of the operation. Indeed, the result of Etherization cannot be better expressed than by the quotation I have given above from a writer who advocates chloroform:—

"The system gradually lapses into a calm, quiet condition, attended with muscular relaxation, closure of the eyelids, and mental unconsciousness."

When, in addition to these perfect results, it is remembered that it is proved by the hard logic of statistics that *Ether is the safest of all anæsthetics, and eight times more so than Chloroform*, I can hardly conceive that anything further is required to prove its superiority to all other agents.

THE ETHER INHALER.

is constructed so as to collect the Ether vapour rapidly, and have it inhaled through the flexible tubing, which, with the mouthpiece, suits any position of the patient.

The respiration is allowed to be carried on freely by means of an india-rubber diaphragm at the top of the instrument, which, by corresponding with each respiration, is self-accommodating. The internal arrangement is such that ample provision is made for the collection of the Ether vapour.

When about being used, pour in *gradually* two fluid ounces of anhydrous sulphuric ether, if for an adult, but proportionably less for a child or female, and apply the mouthpiece to include the mouth and nose. Should the patient not yield in four or five minutes, pour in another two ounces gradually—more will seldom be required, except during some very prolonged operative procedure. It is desirable to keep the inhaler in the erect position as much as possible.

I am persuaded that any practitioner who employs Ether in the manner I have described will be completely satisfied with the results.

He will also be freed from the incubus of the

DANGERS OF CHLOROFORM.

He can conscientiously advocate with his patient the employment of an agent which has been proved to be, though hitherto used in an imperfect manner, the

SAFEST OF ALL ANÆSTHETICS.

He will avoid responsibility and the qualms of conscience which in case of a fatal issue from using the more dangerous remedy, Chloroform, must result to him, indicated in the truthful and touching remark of a practical surgeon when relating the fatal effects and dangers of Chloroform which he himself witnessed :—

"The use of Chloroform is a serious business, involving as it does the issues of life and death—how serious few can realize, except those who have seen one or more fatal cases;" and "witness that sad sight when a person lies dead before them, who but a few minutes before was in full possession of life and strength.*"—*Medical Press and Circular.*

Traumatic Hæmorrhage of the Rectum. By WILLIAM BODENHAMER, A.M., M.D., New York.

PROFUSE or alarming hæmorrhage of the rectum, consequent upon surgical operations on its inferior extremity, is by no means a rare occurrence. It is often a very grave affair, requiring

* M. Cloquet, *French Encyclopédie*, art. [illegible].

sometimes the most prompt and energetic measures for its arrest; and if not speedily arrested, leading ultimately to great exhaustion, syncope, and even death. When it is external, or nearly so, it is easily managed; but when it is entirely internal, owing to the narrowness of the anal canal, and the considerable distance up the same of the bleeding wound, it is difficult to get at it; the natural warmth, too, of the intestine itself favors the bleeding; and in consequence of the morbid condition, sometimes, of the blood vessels themselves it is often persistent and difficult to suppress. Surgical hæmorrhage of the rectum, then, is to be dreaded, as well on account of the several discouraging circumstances already named as on account of its being so very insidious, neither the surgeon nor the patient being for some considerable time aware of it, no blood escaping externally to indicate it, or to cause alarm.

The source of the bleeding is generally from one of the hæmorrhoidal arteries, yet it is very often almost entirely venous. I have seen large quantities lost in a few minutes after the division of a hæmorrhoidal vein. The arteries of the rectum are more numerous and of larger size than in any other portion of the intestinal canal, and being chiefly distributed to the posterior part of the rectum, some of their branches may be divided in the operation for anal fistula, sometimes causing serious hæmorrhage; indeed operations on the ano-rectal region are almost always attended with more than ordinary bleeding. There is sometimes an enlarged and varicose condition of the proper veins of this region, especially in old persons and in those who are suffering from diseases of those parts—such as anal fistula, rectal stricture, hæmorrhoids, stone in the bladder, etc. In such cases there is generally great induration of the parts, from inflammatory deposits, involving more or less the hæmorrhoidal vessels themselves; and consequently when such vessels are divided they are, from this cause, unable to retract and contract, and the result is alarming hæmorrhage. Several instances of this character have fallen under my own observation.

In rectal hæmorrhage the blood usually flows into the inferior and middle portion of this intestine, from which, however, it may sooner or later be expelled, either in a semi-fluid or coagulated state; or it may accumulate in large quantities in the superior portion, and in the sigmoid flexure of the colon by regurgitation. It is surprising with what persistency the bleeding continues in some of these cases, even when no large vessels are implicated.

As before observed, this accident often follows the operation for fistula in ano, especially when a sinus has been divided high up. It is also very liable to follow the excision of hæmorrhoidal or other tumors of the anus and rectum by knife or scissors. Serious hæmorrhage is sometimes the result of dividing a stricture of the rectum, when high up. It often follows the division

of the sphinctores ani muscles for anal fissure, and the operation for perineal artificial anus.

Many patients have perished from rectal hæmorrhage, as the records of surgery show, and many more have perished from this cause of whom no record exists. Some of these fatal cases were doubtless lost, either through ignorance on the part of the operator of the proper measures to be adopted in such a case, or through a want of presence of mind and firmness in him, to insist upon, and promptly to execute the appropriate means. I could here cite numerous examples to prove how alarming, how dangerous, how injurious, and how fatal this hæmorrhage has been.

Such was the constant dread of rectal hæmorrhage that the celebrated Baron Dupuytren, who invariably removed hæmorrhoidal tumors with the scissors, never neglected the precaution of either at once applying the heated iron to the wounded parts, or leaving an assistant with the patient in order to arrest the bleeding by the same means should it occur. Indeed this distinguished surgeon recommended the actual cautery to be applied to the wounded surfaces in every case immediately after each operation of the kind, as he found its application absolutely necessary in nearly every patient upon whom he operated, in order to arrest frightful hæmorrhage; and for this purpose had special cauteries constructed.—(*Lecons Orales de Clinique Chirurgicale.* Tome i., p. 357. Paris, 1832.) The same dread of hæmorrhage induced Sir Astley Cooper to reject the use of the knife and scissors altogether in the removal of hæmorrhoids, and to adopt instead the use of the ligature. This great and good surgeon was candid enough to admit in his lectures the loss of several of his patients from hæmorrhage, consequent upon excision of hæmorrhoidal tumors.—(*Surgical Lectures.* By Tyrrell; p 301. Philadelphia, 1839.) The late Sir Benjamin C. Brodie says he nearly lost three patients from rectal hæmorrhage, following the excision of hæmorrhoidal tumors.—(*Clinical Lectures on Surgery*, p. 314. Philadelphia, 1846.) The late able and distinguished Mr. Syme considered that serious and fatal hæmorrhage was exceedingly liable to follow excision of hæmorrhoids.—*On Diseses of the Rectum*, p. 77. Edinburgh, 1854.) Mr. Fergusson, with the same dread of rectal hæmorrhage before him, says: "I have an equally strong opinion as to the impropriety of cutting internal piles with the knife or scissors. There may be such an internal bleeding as to endanger life, as I have myself experienced; yet while I admit that such a practice may be followed again and again without mischief, I would earnestly caution the young surgeon against rashness in this respect. In one instance, having become emboldened from using the scissors with impunity in a variety of cases, I nearly lost a patient from hæmorrhage into the rectum, from a small portion of a wound in the mucous membrane, which passed within the sphincter. On cleaning the rec-

tum from a large collection of blood, and applying ice, the bleeding stopped; but probably this was as much the result of the faintness from loss of blood as from any such surgical means that were adopted."—(*A System of Practical Surgery*, p. 549. Philadelphia, 1853.) The late Dr. Bushe says, "that excision of hæmorrhoidal tumors not likely to be attended with hæmorrhage, I deny, for I have performed the operation several times, and after it, have had to tie up arteries, plug the rectum, and in one instance to apply the actual cautery. Indeed, I so nearly lost two patients, that when left to my own choice I no longer have recourse to this operation."—(*A Treatise on the Malformations, Injuries and Diseases of the Rectum and Anus*, p. 183. New York, 1837.) The following pertinent remarks upon this subject are from the able and distinguished Professor N. R. Smith, of Baltimore: "Excision of hæmorrhoids is the expedient that first presents itself. But for one circumstance—the danger of hæmorrhage—this would be the shortest and most effectual expedient. This has been in times past much practised, and often with success. But the occurrence of many fatal cases of bleeding has deterred the modern practitioner. Sir A. Cooper's cases are well known, and were all surgeons as candid, we should have many more such beacon lights. Were the bleeding part so located as to be accessible to our remedies, there would be no risk; but when a hæmorrhoidal tumor has been cut away with the knife, the wounded surface retires within the sphincter and is reached with great difficulty."—(*Baltimore Medical Journal*, vol. i., p. 9, January 1870.)

The same dread of surgical hæmorrhage of the rectum led to the invention and the adoption of the *ecraseur* for the removal of hæmorrhoidal tumors. But *ecrasement* by no means always insures against alarming hæmorrhage of the rectum sooner or later after such operation, as the records of surgery abundantly prove.

With regard to the incision of hæmorrhoidal tumors by knife or scissors, particularly if they are large and situated above the sphinctores ani, and a vein has been freely opened, the operator cannot expect anything but a free and copious discharge of blood; the structure of the portal veins facilitating such a sequel to the operation. Attention, however, to the different conditions of the affection, and the relations of the tumors to the anal sphinctores, will always enable the surgeon to be prepared for the hæmorrhage, and to have his means always in readiness to arrest it in case it should follow a properly considered and well-executed operation. In consequence of inattention to these pathological conditions and measures, the worst results have followed, as well as may again hereafter follow.

Were the measures, however, for arresting surgical hæmorrhage of the rectum as well understood and appreciated as they by all means should be, or as those are at the present day for

suppressing such hæmorrhage generally, few fatal cases, in my opinion, would ever be likely to occur, whether either knife or scissors were used.

Symptoms.—Besides the characteristics which are common to all internal hæmorrhage, that of the rectum has peculiarities which enable it to be readily distinguished from all others. In the largest number of instances from one to four hours elapse after the operation before the symptoms indicating rectal hæmorrhage begin to manifest themselves. The patient, after having recovered from the excitement and fatigue of the operation, and perhaps after having been comparatively comfortable for some time, has now a tendency to drowsiness, or becomes anxious, agitated, and restless; he has tingling of the ears, swelling, tension, and sensibility of the abdomen, especially in the left iliac fossa; and is sometimes conscious of a sensation of warmth or heat extending gradually along the bowel from below upwards; has perhaps colic pains, with a painful kind of tenesmus and frequent desire to evacuate the bowels with more or less inability to do so; his pulse is intermittent or irregular. Sooner or later, unless relieved, other and more marked symptoms supervene. There is now a tendency to stupor, and a deadly paleness overspreads the patient's face, which, together with the whole surface of the body, is often bathed in cold perspiration; his respiration becomes hurried, difficult, and anxious; his pulse small, frequent, and almost imperceptible; he sometimes has nausea and vomiting; is seized with rigors, spasms of the extremities, and vertigo. Such phenomena cannot well be misinterpreted by the surgeon, inasmuch as they plainly indicate that alarming hæmorrhage is going on within the rectum, and that the blood in the mean time is accumulating in the colon. The patient may die without even discharging the contents of the bowels; but in most instances the tenesmus becomes so great that he makes efforts to stool, and evacuates a large quantity of clotted blood, and whilst doing so, often faints, which, for the time being, opposes a barrier to the further effusion. More frequently, however, when the intestine is relieved of its contents, especially if this has been effected in the recumbent or horizontal posture, a sense of general ease and comfort is the immediate consequence, and the only well-marked remaining symptom is that of great prostration. Should the surgeon now neglect to avail himself of this precious truce in arresting the bleeding promptly, the symptoms will be almost certain to reappear speedily, and if possible more alarmingly than before, and the patient's previous restlessness will often be followed by feelings of despair; and the depression consequent upon this will sometimes be such that he will even pray that death might come to his relief.

Suppression of the Hæmorrhage.—The measures for arresting rectal bleeding differ, and may be comprised in the following:

1. *Ligation*; 2. *orsion*; 3. *Cauterization*; 4. *Comp ression*; 5. *Styptics*; and 6. *Cold Applications.*

The ligature, twisting, and the actual cautery are the chief measures, however, upon which to rely in alarming cases. But as cauterization with the iron is almost certain to be followed by high inflammation, if not by sloughing and contraction, it should be employed only as a *dernier resort.* Torsion is as efficient and as erliable as ligation, when the vessel is small and sound. It is especially indicated in cases in which the bleeding is so deep that the vessel cannot be tied.

Should the operator entertain the slightest suspicion that internal rectal bleeding is taking place, he should at once direct the patient to evacuate the bowel if possible. Should the patient, however, fail in accomplishing this by the natural efforts, an enema of one or two pints of cold water, or salt and water, should be administered, and if necessary, repeated every few minutes, until the rectum becomes so stimulated as to completely expel its contents, which, if hæmorrhage has been going on, will generally be found to consist of a greater or less quantity of coagulated blood. The patient thus by his straining efforts might perchance force down the bleeding wound sufficiently low so as to be seen; should he fail, however, in this, in consequence of the wound being too high up, the operator should then endeavor to pull down the rectum gently, by means of a vulsellum or pronged hook inserted into the submucous tissue, until the bleeding point was fairly brought into view, and then the vessel either ligated, twisted, or cauterized, as he might select. This method sometimes happily succeeds. The great difficulty, however, in some instances, is to ascertain precisely whence the bleeding proceeds, especially when from small vessels and at several points. Nothing but a minute examination of the interior of the rectum by means of a proper speculum will enable the operator sometimes to detect the bleeding point or points, unless the hæmorrhage proceeds from a large vein, or from a considerable artery, as indicated by the peculiar jet or scarlet color of the blood.

Failing by the above process, and with the intention now of employing the speculum, the rectum and bladder both having been previously emptied, the patient should be placed upon his left side, on the edge of a bed or table, in front of a strong light; the back and hips as near the edge as possible, the pelvis elevated, the head and shoulders depressed to favor the action of the heart and the return of the blood to the brain, and the thighs flexed upon the abdomen. A piece of rubber or oil-cloth, if at hand, or something else, should be placed under the hips, so as to protect the bed from the fluid discharges, and a vessel placed at the bedside to receive them. It is also important that a free access of air should be provided in the room. The patient being in this position, the operator should intro-

duce into the rectum the tri-valve trellis speculum (Fig 1).

Fig. 1.

which I devised a number of years ago especially for this purpose. This instrument is quite small when closed, and easy of introduction, and when introduced admits of extensive expansion by simply revolving the handle. By it, when the blades are widely expanded, all the sides of the interior of the rectum are at once brought into view; and by the aid of a sponge mop the exact source of the bleeding may be easily discovered. The speculum, thus revealing the true state of the case, gives the operator great advantage in controlling the hæmorrhage, by giving him confidence, courage and hope. He sees when the effusion comes, and makes an estimate of the quantity being lost, by what passes out through the opened anal orifice, as no internal accumulation can now any longer take place. If he should thus find that the effusion is not very great nor alarming, cold applications in the form of irrigation might be employed before resorting to ligation. This generally arrests ordinary, and sometimes even extraordinary bleeding. The iced-water should be directed through the open speculum upon the bleeding point in a *continuous* stream from a Davidson syringe. If the stream is made directly upon the wound, it has a powerful tendency to promote the contraction of the bleeding vessel, to allay pain, and to prevent inflammatory action. This course, if successful, should be continued until the hæmorrhage entirely ceases, and then the speculum should be partially closed and carefully withdrawn. If the hæmorrhage, however, is found to be rapid and alarming, the bleeding vessel must at once be tied, twisted, or cauterized before resorting to irrigation.

Ligation.—For the purpose of seizing and ligating a bleeding vessel some considerable distance up the rectum, I use instead of the common tenaculum the long and slightly curved spring forceps (Fig. 2.) which I had constructed especially. It has a sliding attachment, intended chiefly as a *porte-ligature*, lying flat

upon its upper blade, and nearly of the same length. This attachment at its distal end has a beak for holding and carrying the loop of the ligature; near its centre it is armed with two narrow flanges which partially embrace the lower blade of the forceps; and near its proximal extremity it has a rough button, by means of which the slide is projected as far as necessary for carrying the loop of the ligature, and also retracted; by these two movements the blades of the forceps may be locked and unlocked, as may be desired.

The operator, seeing the bleeding vessel through the speculum, seizes it with the forceps previously armed with a suitable silk ligature of sufficient length, and having the proper noose in the centre of it. He now projects the slide, by which movement he locks the blades, and carries the ligature to the seized vessel. He then places the locked forceps into the hand of the assistant who holds the speculum, and whilst holding both ends of the ligature in his left hand, and with a long probe in his right, disengages the noose from the beak of the *porte-ligature* and places it upon the base of the seized vessel, and when properly adjusted, tightens the knot firmly by means of Dr. A. L. Carroll's admirable *knot-tier* (Fig. 3). A second knot, if deemed necessary, may be made and tightened in like manner. When the vessel is secured the rectum should be well syringed out with cold water, and if the hæmorrhage has entirely ceased, the speculum should be carefully withdrawn, leaving the two ends of the ligature hanging out of the anus. In the mean time the patient should maintain the horizontal posture, take an opium pill, live on a milk diet, and avoid a fæcal dejection for several days.

Fig. 2.

Should Dr. Carroll's instrument not be at hand the knot may be tied as tight as necessary by a method I have practised for many years in ligating polypoid tumors of the rectum, which is as follows:—The vessel being seized with the forceps as above directed, the operator hooks one end of the ligature in the cleft extremity of the silver director or *sonde cannelée* which he holds in his right hand, whilst the other end of the ligature is held in his left, and sufficient traction made upon each at the same time as to tighten the knot firmly. In this manner a bleeding vessel may be seized with the forceps and secured with the ligature at a distance of four or five inches up the rectum; or a polypoid or pile tumor may be ligated almost as easily and as effectually as if it were at the verge of the anus.

Torsion.—If the operator prefers torsion to ligation, it can be efficiently performed by means of the spring forceps already named, or by Physick's forceps.

Cauterization.—If neither ligation nor torsion can be made available, and the hæmorrhage is alarming and threatening life, the actual cautery should without hesitation be at once employed. The cautery iron should be heated to a white heat, and applied to the bleeding vessel through the opened speculum, being very careful to seal it completely. The severe smarting pain, the constipation, and the retention of urine which follow the application of the actual cautery should be combated by proper means. To relieve the severe pain, anodynes and emollient applications must from time to time be employed. *Constipation* must be relieved by linseed enemata and castor oil; and *ischuria* and *dysuria* by tepid baths, fomentations, and, if necessary, the catheter; and the tendency to contraction, by the use of the bougie.

The cauterization may also be thoroughly effected by the *galvano-cautery* of Middeldorpff.

Fig. 3.

4. *Compression.*—This method of arresting rectal hæmorrhage is valuable, if properly applied and maintained in sufficient force. It is especially applicable to deep-seated bleeding, and in such cases, in which other methods have failed, it should by all means be attempted. It is, however, in rectal bleeding obnoxious to several serious objections:—

1. The parietes of the rectum upon which the compression is made are not firm and resisting enough to make it as completely effectual as would be desired, but are, on the contrary, yielding and distensible to an almost indefinite extent.
2. The pressure, being from the interior to the exterior, is very difficult of accomplishment.
3. The rectum will scarcely ever tolerate in its cavity the presence of any apparatus for making compression. The incessant involuntary expulsive efforts which such a foreign body provokes and, which cause so much inconvenience and suffering to the patient, unless constantly kept under the influence of extraordinary doses of opium, are almost certain to result in its forcible expulsion.
4. Even should the compressing apparatus not be expelled by the involuntary efforts of the patient, it is absolutely necessary for it to be frequently removed, to allow of defæcation.
5. In some instances, notwithstanding the presence of the compressing appliance in the rectum, the internal bleeding may still continue to go on for a considerable period without being detected, and in this way may, for the time being, prove deceptive, and precious time be lost.

Tamponnement.—Several methods have been devised for plugging the rectum, with a view of making compression, and arresting rectal hæmorrhage. For this purpose the *tampon*, *pelote*, or plug, composed of various materials, is generally employed.

A very ingenious method of making compression by means of a kind of double *tampon*, in cases of rectal hæmorrhage, consequent upon the excision of hæmorrhoids, was first suggested and successfully employed by M. Petit, a century ago.—(*Traité des Maladies Chriurgicales.* Tome ii. p. 128. Paris, 1790.)

This method of Petit was subsequently simplified and improved by M. Boyer.—(*Traité des Maladies Chriurgicales.* Tome vi. p. 556, 5th Ed. Paris, 1849.)

For the same purpose M. Desault employed with success a *tampon* composed of a square piece of linen, the centre of which was introduced into the rectum, and filled with lint; after which the corners of the same were strongly pulled against the buttocks, and secured by a bandage.—(*Ouvres Chirurgicales.* Tome ii. p. 417. Paris, 1813.

A modification of the methods of MM. Petit, Boyer, and Desault was made by our own countryman, the late and lamented

Dr. Barton, of Philadelphia. His method is as follows:—" Take a sufficient number of pledgets, made from portions of a common roller-bandage, or other piece of muslin, about two inches in width, and long enough, when loosely wound, to gain ready admittance into the rectum. Let each pledget be secured by a ligature, tied round the middle of the roll, and long enough to leave several inches of the ligature freely dependent from the anus. Introduce these pledgets, previously thoroughly oiled, one after another, into the rectum, until the lower part of that viscus is distended by the muslin, leaving the free ends of the ligatures hanging from the anus. This being done, divide the projecting ends of the ligatures, carrying one-half their number toward the right hip, and the other half toward the left; then take a large pledget or smaller roller, firmly wound, and place it between the parted ligatures, with its axis in the antero-posterior direction: lastly, gather the ligatures from the opposite sides of the anus and tie them across the external pledget with sufficient firmness to arrest the hæmorrhage."—(*American Cyclopædia of Practical Medicine and Surgery.* Art. Anus, vol. ii. p. 115. Philadelphia, 1841.)

I have made and used the following *tampon* successfully on two occasions:—Take a strip of the cotton or linen cloth about nine inches long, and about seven inches wide, sew it up in the form of a bag or purse, wet it, lubricate it with the white of eggs, and introduce it into the rectum some distance beyond the bleeding point by means of a slightly forked slender rod, and then, with the same, stuff the upper portion of the sack tightly with lint, cotton, wool, or tow; afterwards draw on the perineal portion of it, as if pulling it out, until sufficient compression is made from above downwards, to arrest the hæmorrhage. It should now be maintained firmly in this position by a proper compress and T-bandage. To remove the *tampon*, a portion of its contents must first be taken out, which can be very easily done by means of the common dressing forceps. The *tampon*, however, should not be disturbed, if possible, for several days, and measures should be adopted to keep the bowels confined for that period.

Mr. Allingham of St. Mark's Hospital, London, recommends the following method in secondary rectal hæmorrhage:—When called to see a case of this kind, always arm yourself with a full-sized bell-shaped sponge and plenty of cotton wadding: take also some persulphate of iron; or if you have not that, powdered alum. Thread a strong silk ligature through, near the apex of your cone-shaped sponge, and bring it back again, so that the apex of the sponge is held in a loop of the thread. Then wet the sponge, squeeze it dry, and powder it well, filling up the lacunæ with iron or alum. Pass the forefinger of your left hand into the bowel, and upon that as a guide, push up the sponge—apex first—by means of a metal rod, bougie, pen-holder, or a

rounded piece of wood, if you can get nothing better. Now this sponge should be carried up the bowel at least five inches, the double thread hanging outside the anus. When this is so placed, fill up the whole of the rectum below the sponge thoroughly and carefully with cotton wool, well powdered with the iron or alum. When you have completely stuffed the bowel, take hold of the silk ligature attached to the sponge, and while with one hand you pull down the sponge, with the other push up the wool. This joint action will spread out the bell-shaped sponge, like opening an umbrella, and bring the wool compactly together; if this is carefully done no bleeding can possibly take place, either internally or externally."—(*Fistula, Hæmorrhoids, and other Diseases of the Rectum*, p. 122. London, 1871.)

A pig's bladder, softened in warm water and introduced into the rectum, and filled with *charpie*, makes a good *tampon;* it was first used with success by M. Levret, and subsequently recommended and used by M. Dupuytren (*loc. cit.*) and others. The bladder may be filled with either lint, air, or water.

Upon the same principle, the late Dr. Bushe invented a very ingenious instrument for making compression in rectal bleeding (*op. cit.* p. 185).

Digital Compression.—Direct compression by means of the finger or fingers, introduced into the rectum, cannot be considered as a methodical proceeding. It constitutes, at best, but a temporary means until the operator can have recourse to a more energetic plan. The operator should introduce the first and second finger of his right hand into the rectum, and make firm pressure upon the bleeding wound, and at the same time urge the patient to make efforts to draw up the anus, or to contract the sphincters as closely as possible, and thus endeavour by these two forces to compress the bleeding vessel or vessels. It is true that digital pressure, unless it is maintained by a relay of assistants, is very inconvenient and fatiguing to the operator, but as it sometimes succeeds well, it should be resorted to. If by this proceeding the hæmorrhage is arrested, the fingers, after having remained in the bowel from one to two hours, may be carefully withdrawn, and small bags of ice applied to the anus.

5. *Styptics.*—The considerable depth at which the bleeding occurs in rectal hæmorrhage renders ineffectual, to a great extent, those hæmostatics to which recourse is had when the source of the bleeding is less deeply seated.

When the effusion proceeds from small vessels, and at numerous points, it may often be suppressed by the insufflation of a powder composed of equal parts of alum and tannin, or by powerful astringent injections. Mr. Curling, Surgeon to the London

Hospital, recommends the following as a valuable injection in obstinate rectal hæmorrhage :—

℞ Tannic acid..... ʒj.
Alcohol..... ʒiij.
Aquæ ..... ℥j.

Fiat injectio.

6. *Cold Applications.*—These, even as adjuvants, are highly valuable, and cannot be dispensed with whilst the hæmorrhage continues. The cold applied in the form of irrigations I have already recommended and described. Small bags of ice should be contantly kept applied to the anal region as well as to the thighs.

To conclude, the patient during the whole treatment should be required to maintain strictly the recumbent or the horizontal posture, and to freely use acidulated drinks. Full doses of opium, or opium combined with the acetate of lead or gallic acid, should be administered. These are measures that should never be omitted, inasmuch as they constitute a very important part in the treatment of all traumatic hæmorrhages. In great prostration the treatment must be stimulating. A smelling-bottle must be held to the nose of the patient, and if he can swallow he must take large quantities of brandy, either alone or in union with ammonia. These remedies may be aided, if necessary, by the application of heat, friction, and sinapisms to the spine as well as to the præcordial region, measures which will generally soon restore him. When reaction begins the patient must be carefully watched, lest over-stimulation take place, followed by excessive nervous and sanguineous excitement. I would once more observe, before closing, that some cases of rectal hæmorrhage admit of no delay whatever, being quite alarming from the commencement, by rapidly exhausting the patient. Such cases require the most prompt and vigorous action, or all will be lost; hesitation or indecision would be fatal. The means already pointed out must be put into immediate force ; the rectum must be thoroughly emptied of the blood ; the anus must be dilated with the speculum, the bleeding vessel or vessels, if possible, taken up by ligature ; or, if this is impossible, the actual cautery must be resorted to, or compression, astringents, and cold applications must be employed and steadily persevered in until all danger is over.—*Medical Record.*

Tobacco.

According to German statements, in case of juvenile smoking the blood corpuscles, lose their round shape and become oval and irregular at their edges ; while instead of mutually attracting each other, and running together in *rouleaux* they cohere loosely,

or lie scattered on the field of the microscope. The following facts show its deleterious effect on the brain.

M. Bertillon found that 102 of the pupils attending the Polytechnic at Paris smoked, while 58 did not. Arranging the two categories in order of merit, according to the results of examinations, he found in every grade non-smokers held the higher rank, and that the smokers, compared with the non-smokers, deteriorated from their entering to their leaving the school. Facts like these induced the Minister of Public Instruction to issue to the directors of colleges and schools throughout the empire a circular forbiding tobacco to students, on the ground that the physical and intellectual development of many youths had been checked by its use. Amongst ourselves the habit is getting too common, with the results of impaired eyesight, thinning of the hair, and other symptoms of excessive draughts on nerve centres. But how is the habit to be stopped when meerschaum pipes are even given for prizes in Sunday schools?—*Medical Press and Circular.*

A new method of Nourishing Patients per Anum.

Dr. W. O. Leube, of Erlangen (*Deutches Archiv. furklin. Med.*) has made recent investigations on the nourishment of patients *per anum* with an injection-mass prepared in the following manner: With the object of introducing into the large intestine nutritive material resembling its ordinary contents, and of establishing, as far as possible, natural conditions in this part of the alimentary canal by artificially produced digestion, he has endeavoured to transfer to the large intestine a part of the digestive processes which normally take place in the small intestine.

From 90 to 100 grammes of the pancreas of the pig or ox are carefully deprived of fat, and finely minced. Then from 150 to 300 grammes of beef are minced and grated. Both substances are then rubbed down in a mortar with some warm water, in order to form a thick soup, which is taken up into a clyster syringe, furnished with a wide opening. If it is wished to submit, at the same time, fat to digestion, from 25 to 50 grammes of this substance may be added. Starch likewise may be added. A purgative enema is to be administered one hour previous to this nutritive clyster.

His experience clinically in the use of this mode of feeding is as follows:—

1. The injected mass, when it consists of nothing more than meat and pancreatic substance, never causes any diarrhœa, but, on the other hand, generally remains in the large intestine from twelve to thirty-six hours without giving rise to a stool.

2. The patient experiences no disagreeable sensations after the injection, but rather a feeling of ease in the abdomen. In every case, he says he made out that the pulse became fuller, that there was an improvement in the general condition and spirits of the patient.

3. The clysters are not well borne at first; the least digested portion of the injected mass being returned.

4. The above-described injection-mass is superior to other substances recommended for rectal injections, through its efficiency, and the readiness with which it can be made.

Since the publication of the above paper by Dr. Leube the *Centralblatt fur Med. Wissens'ft* of July 20th contains another article from him on the same subject, in which he says, that in the warmth of summer the pancreas begins very soon to undergo decomposition, and in consequence loses its digestive power and becomes irritating to the intestine, producing rapid expulsion of the material injected. These mishaps may easily be avoided by making a glycerine extract of the pancreas. This extract is quite equal in digestive power to the fresh pancreas, and will remain good for several weeks. The following is the manner of preparing this extract in glycerine. The pancreas of a bullock (which is sufficient for three enemata) is finely chopped and rubbed with 250 *grammes* of glycerine; and to each third of this, when about to be used, are added from 120 to 150 *grammes* of finely divided meat. It is important that this mass should be injected into the intestine as soon as it is made; for if it is allowed to stand the meat swells and the operation is thereby rendered difficult.—*Medical Record.*

Extract from Official Diary of E. S. TRIBE ESQ., *Deputy Inspector General Indian Medical Department Nagpore Force.*

Thursday, 14*th November* 1872. "Visited the Hospitals of the 1st Regiment L. C. and of the R. W. 32nd Regiment N. I. In the former there has, I regret to say, been another case of Hydrophobia, in which the relief affoded by Chloral Hydrate was even greater than in the former case."

MEDICAL INTELLIGENCE.

(*General Orders by the Governor in Council.*)

Pay.—British Medical Staff Officers.

18*th October* 1872.

No. 1088 of 1872.—The following Military letter from the Right Honorable the Secretary of State for India, is published for general information :—

MILITARY. INDIA OFFICE,

No. 178. *London, the* 10*th September* 1872.

To His Excellency the Right Honorable the Governor-General of India in Council.

MY LORD,—I have received and considered in Council your Lordship's Military letter, No. 116 of the 1st July 1872, on the subject of the rate of pay admissible to British medical staff officers holding administrative appointments in India, the tenure of which is limited to five years.

2. On a consideration of the orders already published on the subject quoted in the margin, I have resolved that these officers, when absent from India, shall be placed on a similar footing as regards furlough allowances as officers commanding divisions and brigades, and shall be allowed to receive, during the period of their absence on medical certificate, which is to be restricted to six months, their Indian allowances and half staff salary. During absence on private affairs, which is to be limited to four months, no pay will be issued.

G. O. G. G. No. 952, dated 22nd October 1861. Madras G. O. C. C., page 44 of 1870. G. O. G. G. No. 1037,* dated 24th November 1871.

3. In no case will more than one grant of leave out of India be allowed.

4. As stated in your G. O., No. 1037 of 24th November 1871, these officers will, on arrival in England, be examined by a Medical Board, and, if reported unfit for further service

*Madras G. O. G., No. 285, dated 5th December 1871.

in India, they will be removed from the Indian Establishment.

5. With regard to the inquiry contained in your despatch under reply, I have to inform you that, British medical staff officers appointed to India, subsequent to the publication of the Rules of 1868 have not the option of electing the Furlough Rules of 1854.

Inspectors-General of Hospitals.—Pension.

No. 1089 of 1872.—Under the authority of the Right Honorable the Secretary of State for India, it is hereby notified, with reference to G. G. O., No. 825* of 1869, that Inspectors-General or Deputy Inspectors-General of Hospitals, who have completed their tour of service, may at once proceed to England and qualify for higher pension on British pay, instead of remaining in India on unemployed pay for six months.

Servant's Allowance—Medical Staff Officers.

25th October 1872.

No. 1111 of 1872.—The following paragraph of a Military letter from the Right Hon'ble the Secretary of State for India, No. 166, dated the 22nd of August 1872, is published for general information :—

Para. 7. With reference to your G. O. No. 426, dated 17th April 1872, I forward, for your information, copy of correspondence with the War Office, from which you will observe that I have sanctioned the grant of servant's allowance at the rate of 1*s.* 6*d.* a day for two servants to British medical staff officers on the voyage to and from India, when such officers have the relative rank of Major-General.

Officers.—Furlough.

31*st October* 1872.

No. 1131 of 1872.—The following paragraphs of a Military letter from the Right Hon'ble the Secretary of State for

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* Madras G. O. G., No. 286, dated 24th August 1869.

India, No. 180, dated the 10th September 1872, are published for general information :—

Paragraph 8. Officers who may be *ordered* to return to duty for the purpose of proceeding on field service, may, if they can be spared, be allowed to avail themselves of the balance of their furlough without completing a residence of three years in India from date of last return to duty.

9. The period of the voyage to India when ordered out, and the voyage home when taking the balance of furlough, will be considered as service for pension.

CORRESPONDENCE.

To the Editor of the Madras Medical Journal.

SIR,—I certainly thought that the paragraphs quoted from my own reports, together with my assertion as to what were my views with reference to the meaning of nitric acid in water, would have sufficed to convince any ordinary person that they are not, nor have been, such as Mr. Nicholson has endeavoured to saddle upon me. But no, Mr. Nicholson has declared my views on this question incorrect; he knows better than I do myself what my opinions are, and therefore all that I have advanced on the point must be explained away. And now to my utter surprise it appears that when I approved a water which contained nitric acid, and when I did not ignore the existence of nitrates in the soil of India, I was only adopting and agreeing in the opinion of the Analysts (as if because I happened to agree with an Analyst on any point, it was not conceivable that we could both hold the same views; no, I was simply clinging to the skirts of his knowledge and experience), and when I did not condemn a water which contained nitric acid, I refrained from doing so only because I was afraid of offending an Analyst. In the name of all that is fair and courteous where has Mr. Nicholson found his grounds for this new and insulting attack upon me? What proofs has he of this moral cowardice on my part? Why in the world should I have feared to differ from the Analysts, all, be it remembered, gentlemen, and, which perhaps is less to the point, all Medical officers my juniors, the greater number of them my juniors by twelve or thirteen years, placed by Government under my direction? What mode of argument can I use with a man who tells me I do not know what my own views are, and that, when I have, apparently, been in the right, it is only beause I have been afraid to express them?

In the case of the Seetapore waters it was the Analyst, not I, who condemned them. He found nitric acid and ammonia in the waters and attributed their presence to the results of defective drainage, and I, in commenting on his report, wrote the paragraph quoted in my last letter, in which I pointed out that, as nitric acid was present in the soil in the district, its presence in the well waters could not be accepted as evidence of their artificial contamination.

In my last letter I purposely took my quotations from the fourth report only, a report which I knew was in Mr. Nicholson's possession, but as they do not suffice to convince him, here is another from my second report published in December 1867.

Writing of the Agra waters I expressed myself thus:— "All the well waters of Agra contain nitric acid in more or less quantity: but I do not believe that this is owing to any thing like sewage contamination of either the soil or of the water in the wells, for the soil itself over that district of country contains nitrates, and there is every reason for believing that under favorable circumnstances, such as the soil and climate of Agra present, nitrification may freely occur, though all matters that could in any way be brought under the denomination of sewage may be altogether absent. Still, even in Agra or in any other nitre-producing district, if we find nitric acid in what may be called abnormally large quantity in any one water, we may very reasonably suspect that it is being polluted."

Now I would ask whether that is not an expression of my own individual views, and of views utterly contrary to those with which Mr. Nicholson would saddle me? If it is not, all I can say is, that words are meaningless, that I do not know what views I have myself held, and that any assertion on my part as to what they are or have been is useless.

With regard to my opinion that "nitric acid has been well called fossil organic matter, but it is a fossil which may be of very recent formation," I adhere to it, but I have nowhere said that nitric acid is necessarily *fossil sewage*, and I have never condemned a water simply because it contained nitric acid, nor have I anywhere implied that nitric acid in a water is necessarily due to sewage contamination. But, with regard to the Murree waters (to which Mr. Nicholson refers), and the waters of others of our Himalayan Sanitaria, I have no hesitation in saying that the nitric acid in them is largely due to oxidized sewage. Any one acquainted with those Hill stations knows that destitute as they are (or were when I wrote) of public latrines, and of any provision for the removal of night soil, the whole of the night soil is cast upon the hill side, and is thence washed in every stage of putridity and decay into the ravines and water courses on the first occasion of a shower of rain.

In conclusion, and in answer to all that Mr. Nicholson has

said of my non-recognition of the natural presence of nitric acid, and chlorides in varying quantity in the soil, I adduce a precaution which, from the very first, I enjoined upon the Analysts, lest they should fall into those very errors with which Mr. Nicholson charges me. My directions ran as follows :—" Should the water be found to contain nitric acid in any notable quantity it would be well to examine the soil for it. This may be most conveniently effected by digging a shallow well in a place where the access of sewage is impossible, and examining the water which drains into it. The water thus obtained should be examined as regards the amount of chloride of sodium it contains."

I do not wish to prolong this discussion, for it is, to say the least of it, disagreeable to be charged with blundering stupidity, and ignorance, as in the passage from Mr. Nicholson's letter, which I quoted in my last, or to be insulted with such an assertion as that in the course of my public duty, I suppress my own views, and adhere to others, for fear of offending my subordinates, or any one else, and I must therefore ask you Mr. Editor, if Mr. Nicholson, after reading this letter, still persists in asserting that he has not misrepresented me in the passages just alluded to, that you will decide between us, and close the controversy by a judgment from the Editorial chair.

Yours faithfully,

D. N. MACNAMARA.

CALCUTTA,
21*st November.*

Extract from Dr. MACNAMARA's, *Fourth Report on Potable Waters of Bengal.*

" *Seetapore.*—Dr. Orton was engaged in analyzing the waters of Seetapore, during March and April; occasional slight showers fell during his visit, but the periodical rains had not set in. The water supply of the station is entirely from wells, and the supply is abundant, and naturally good.

The quantity of solid matter in solution varies from 9 to 19 grains, nitric acid and ammonia were present in the water of all the wells, but the water in the wells had been stagnant for some time previous to Dr. Orton's visit, owing to

the non-occupancy of the cantonments, and this fact may account for the very general presence of ammonia in the water. The nitric acid is present in large quantity in the water of some of the wells, and may be to a certain extent derived from sewage pollution, but I suspect it is present in the soil over the district in which Seetapore stands, and I do not therefore look upon its presence in small quantity in any of the waters as necessarily indicating artificial contamination.

Dr. Orton notices that the wells are badly constructed, needing efficient platforms and drains to prevent waste water running back into them. He also states that the general system of drainage is imperfect, but I cannot think with him that proximity to the wells of the drains which are intended to carry off rainfall can affect the drinking water unless the drains are largely put to improper uses, and unless the water remains stagnant in them for some time in the neighbourhood of the wells.

I quite agree with Dr. Orton in his opinion that wells which are used to supply drinking water should be more frequently and more thoroughly cleansed than is now practised: but I do not think it would be possible, as he suggests, to deepen a well every year. Would it not be a good plan to floor the bottom of every pucka well with perforated tiles or stones; it would then be an easy matter to clean out the soil every year without meddling with the construction of the well.

The water of well No. 2, in the Artillery lines, (the one between Nos. 1 and 2 Barracks,) differs very much from that of the other wells. It contains double the average quantity of solid constituents;—it contains a large quantity of nitrates; ammonia was largely present in it at the time of Dr. Orton's visit, and the water contains about ten times the amount of common salts natural to the waters of the station: all this makes me confident that the water is suffering artificial contamination, and I think that unless it is found to improve after the well has been thoroughly cleansed, and after every apparent possible source of pollution has been removed, its use as a potable water should be discontinued.

Dr. Orton's report is appended."

(True copy.)

D. W. MACNAMARA.

21*st November*, 1872.

Extract from DR. ORTON'S *reports upon the Waters of Seetapore, dated 20th April* 1868.

"My investigations into the probable sources of contamination of the drinking water in this cantonment have led me to the conclusion, that of all causes of contamination at this place the most active originates in a faulty and imperfect system of drainage, and whenever this is the state of things, of course every well must, to a greater or less degree, suffer.

Now it will be seen from the reports of the Analysis made, that there is a trace of nitric acid and ammonia in the water obtained from every well—very little I allow, but still nitric acid and ammonia. Their presence is far too regular to be accidental, and to my mind this fact is indicative of some common source of contamination.

In their relationship to habitations, barracks, baths, cookrooms, latrines, &c., the wells in this Cantonment all very much resemble one another. In addition they are all of recent and careful construction, though capable of still more judicious completion, for instance, they might usefully be provided with covers to keep out dust, leaves, flies, &c. &c., foreign matters of all kinds and description, which experience has taught us only too readily and easily, find admission through atmospheric, human, and other agency. Again, their stages or platforms might be beneficially furnished with drains to carry off the water which is spilt on the ground or trickles down the outside of the masonry, and which, under existing circumstances, percolates the soil round and about, and may possibly find its way back into the well.

But to return to the drainage, which appears to me to be the prime source of contamination here. Upon one occasion, when visiting the Lines after a smart thunder shower, I particularly observed that the water, though it ran off the barrack enclosures into the trenches or drains constructed for its reception, in these latter, remained stagnant, and this stagnation continued for a period of three days after the rain fall.

Now from personal observation I am satisfied that these trenches are wide, deep, and numerous enough for the purpose, and rapidly fill when occasion requires, but having filled, or rather when partly filled only, the water remains in them for several days, simply because their incline is

hardly sufficient. Of course during the heavy rain, with the impetus of a large and increased volume of water, this defect would be considerably lessened, or rather rendered less apparent, but so soon as the force was diminished or withdrawn, then and then only would the water which they contained begin to stagnate. Now these drains having a varying proximity to the wells, and especially the main or chief one, we may surmise, I think, that if those wells which are most contiguous to the main drain are also the most contaminated, whilst those which are further removed are less so, that the source of contamination may be reasonably sought in the drains, and this having been found, the degree of it may be roughly calculated by the difference in the relative proximity in each case of the one to the other.

The two worst wells I have examined in this cantonment, viz., the one marked No. 2, Royal Artillery Lines, and their second mark, No. 11 B., Cavalry Lines, are, as will be seen from the special reports, attached in much closer relationship with the main drain than any of the other wells in Cantonments. The former contains an excess of soluble salts and nitric acid, with a trace of ammonia, the latter a trace of nitric acid with an excess of ammonia, in both instances no doubt derived from bad or imperfect drainage."

(True copy.)

D. W. MACNAMARA.

21*st November*, 1872.

To the Editor of the Madras Medical Journal.

Sir,—Permit me to suggest the propriety of your ceasing to permit your valuable journal to be burdened any longer by correspondence on the subject "Nicholson *versus* Macnamara." It is not edifying, and its tone is not pleasant.

If men like to indulge in strong language let them do so by all means, but they should not be allowed to inflict it on the public.

I am, &c.,

CONSTANT READER.

TO CORRESPONDENTS.

The Inspector General, I. M. D., *Received with thanks.*
Assistant Surgeon L. C. NANNEY, „

BOOKS, &c., RECEIVED.

The Doctor, *October* 1*st.*
Medical Press and Circular, *October* 2*nd*, 9*th*, 16*th*, 23*rd.*
Medical Record, *September* 16*th*, *October* 1*st.*
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